

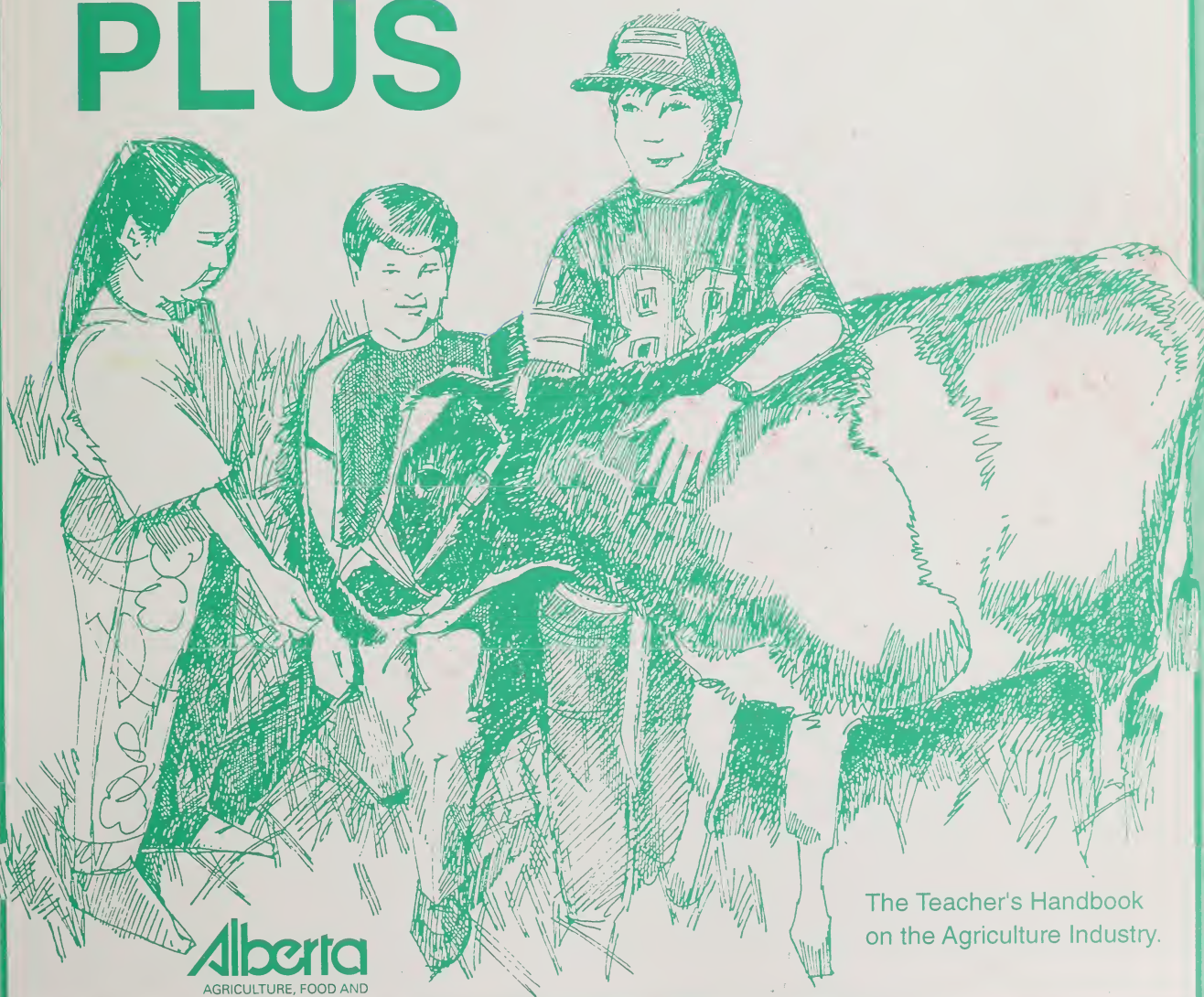
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PRIDE IN ALBERTA PLUS



Alberta
AGRICULTURE, FOOD AND
RURAL DEVELOPMENT

The Teacher's Handbook
on the Agriculture Industry.

United Grain Growers was formed in 1906 by a group of prairie farmers. UGG is a farmer owned corporation which has become one of the largest grain handling companies in Canada.

UGG is pleased to join with Alberta Agriculture in the Classroom Program by sponsoring the printing of this resource for educators to use in their classroom.

We endorse the vision of A.I.T.C. which states that through this program and it's resources our future citizens will have a better understanding of the food industry and as a result be informed decision makers.

It is our hope that we can inspire you to integrate an agriculture theme with your science, social studies and language arts curriculum.



Ted Allen
President
United Grain Growers



SECONDEDITION

January 1995 - 2000 copies
For further information contact:

Alberta Agriculture, Food & Rural Development
Ag. in the Classroom Program
Agricultural Education &
Community Services Branch
2nd Floor, 7000 - 113 Street
Edmonton, Alberta T6H 5T6

Phone: 427-2171

PRIDE IN ALBERTA PLUS

A Resource Book For Teachers

Division 2

(Language Arts, Social Studies, Science)

Alberta Agriculture, Food & Rural Development

1995



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Credit

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Introduction to the Teachers

Welcome to **Pride in Alberta Plus**! The first books in the series **Pride in Alberta** contained activities aimed at students in grades four, five and six. **Pride in Alberta Plus** is a continuation of the series, filled with experiments, skits, games and activities. They will assist you, the teacher, to infuse an agricultural awareness into the existing provincial curricula. We've done our best to make these activities as complete and easy-to-follow as possible.

The first section of this handbook is Curriculum Connection. It lists each activity and specifically describes where it fits into the provincial guidelines. This feature will enable you to choose activities to fit into your unit or yearly plans. Each activity is prefaced with a lesson summary stating objectives, curriculum fit and materials required. It is our hope that these features will make the activities easy to access and use.

Grade levels are suggested for each activity, however, the activities can be modified or adapted to meet the special interests, needs and abilities of the students. The activities have been useful for enrichment or split classes.

Many children and adults have misconceptions about the agricultural industry. We hope these activities will help dispel some of the myths and increase the awareness of the importance of agriculture to students in Division Two.

Additional resources, including publications and films, are available from Alberta Agriculture. A film catalogue and publication list may be obtained by contacting:

**Alberta Agriculture Food and Rural Development
Publications Office
or
Multi-Media Library
7000 - 113 St.
Edmonton, Alberta
T6H 5T6**

Activity Outline

Each activity in this book follows this format:

1. **Title**
2. **Study Question** - focuses the activity; try to answer it before going ahead
3. **Activity** - summarizes the activity
4. **Curriculum Fit** - suggests which subject is emphasized in the activity and gives you a precise reference to curriculum statements found in your provincial curriculum guides for Language Arts, Social Studies and Science
5. **Agriculture Concepts** - suggests what students will learn about agriculture
6. **Purpose** - describes the goal behind the activity
7. **Materials Required** - lists materials needed for the activity
8. **Time Required** - estimates time needed to complete the activity
9. **Background -- For the Teacher** - gives a brief overview of the activity and sometimes background information needed to complete the activity
10. **Procedure** - describes steps suggested to introduce, carrying out, and conclude the activity; marginal notations highlight the steps and reflect the curriculum areas
11. **Discussion Questions** - lists questions that can be used in a discussion
12. **Related Activities** - suggests additional activities that grow out of the main activity, but may require additional resources as well as time
13. **Resource Sheets** - provides resource material for student and teacher use:
 - pictures
 - background information
 - samples of student activity sheets



this symbol marks
all student resource
material



this symbol marks all
information sheets or
other teachers' material

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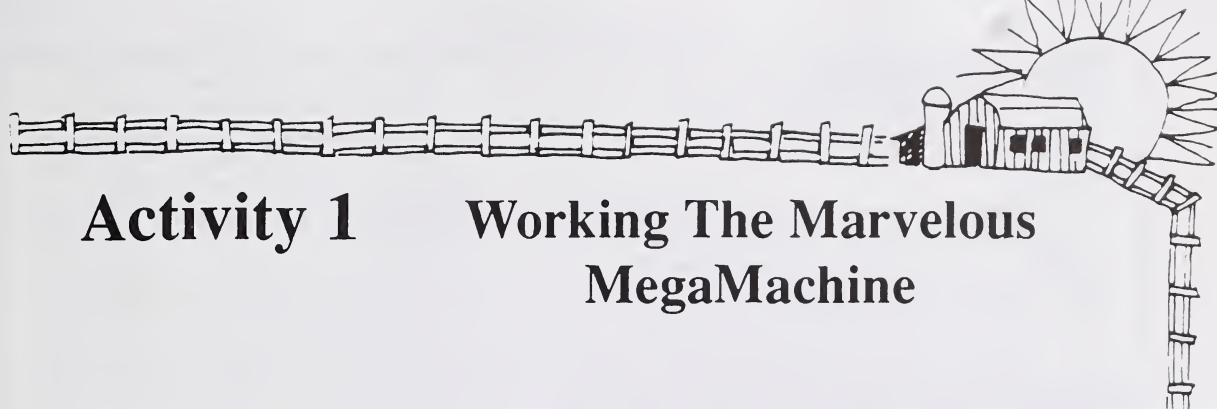
Curriculum Connection

PRIDE IN ALBERTA PLUS - DIVISION TWO

Lesson Title	Subject Area	Curriculum Connection	Major Agricultural Concepts	Language Arts Skills
1. Working the Marvelous MegaMachine	Social Studies Grade Four or Six	Alberta's links with Canada and the world.	Production, Processing and Distribution Systems	Listen/view alternatively. Speaking skills.
2. Working the Marvelous Mega-Machine: Part B	Social Studies Grade Four	Self-sufficiency/independence. Alberta's links with Canada and the world.	Economic Importance	Speaking skills, comprehension.
3. Getting Warm, Keeping Cool	Science Division Two	Energy resources and conservation.	Technological and Capital Intensity	Read increasingly complex materials.
4. 'Tis the Season	Social Studies Division Two	Multiculturalism.	Diversity	Describe events orally.
5. Once Upon a Time	Language Arts Grade Four		Diversity	Tell stories in a variety of formats: fables.
6. Animal Trivia	Science Division Two Social Studies Division Two	Living things and the environment. Indepth life studies. Topic B: Alberta's past and present.	Economic Importance Production, Processing and Marketing Diversity	Read increasingly complex written descriptions, explanations and clarifications.
7. Touring the Barns of Time	Social Studies Grade Four Art Division Two	Topic B: Alberta's past, present and future: our human resources.	Diversity: Capital and Technologically Intensive Nature of Industry	Speaking skills. Use appropriate forms of written language. Work with varied mediums.

PRIDE IN ALBERTA PLUS - DIVISION TWO

Lesson Title	Subject Area	Curriculum Connection	Major Agricultural Concepts	Language Arts Skills
8. So, How is Everybody?	Science Grade Five Health Grade Five	Living things (diseases).	Diversity Economic Importance	Use appropriate forms of written and oral language (stories, directions, notes). Growth.
9. Start a Store	Social Studies Grade Four	Topic B: Alberta's past, present and future: our human resources.	Economic Importance Production, Processing and Distribution Systems	Speak and write fluently about complex subjects.
10. Minding the Store	Social Studies Grade Four	Topic B: Alberta's past, present and future: our human resources.	Economic Importance Production, Processing and Distribution Systems	Speak and write fluently about complex subjects.
11. The Agriculture Rainbow	Social Studies Grade Four	Lifestyles: Modern Time (matter and energy: light)	Production, Processing and Marketing Systems	Demonstrate awareness of how picture design contributes to meaning.
12. Save the Soil	Science Division Two	Studying soil, ground for erosion.	Importance of Soil and Water	Speak and write fluently about increasingly complex material.
13. School Agricultural Fair	All Subjects Division Two	Importance of agriculture to people's daily lives.	Economic Importance Capital and Technologically Intensive Importance of Soil and Water Production, Processing and Marketing Systems Diversity	Speak, read and write fluently about increasingly complex material.



Activity 1 Working The Marvelous MegaMachine

Study Question: Why is Winnipeg, Manitoba an important part of every grain-raising rural community in Alberta?

Activity: Students watch a video about grain exports and transportation in western Canada, then act out the roles of people involved in this process.

Curriculum Fit:

Division Two - Language Arts

- Demonstrate ability to listen/view attentively for longer periods
- Speak fluently about increasingly complex subjects

Grade Four - Social Studies

- Alberta's links with Canada and the world
- Interdependence, trade, transportation and communication links

Grade Six - Social Studies

- Meeting the physical needs of people in Eastern societies

Agriculture Concepts: Production, Processing and Distribution Systems

Purpose: To have students act out the roles that make the Canadian grain export system function.

Materials Required: game cards and rules (enclosed)
video: Marvelous Prairie MegaMachine Alberta Agriculture, Food and Rural Development Multi-Media Library
or
ACCESS
rice or similar granular material
beakers or small paper cups

Time Required: Sixty to ninety minutes (can be in two time blocks).

Background — For the Teacher

This activity is complex but not overwhelming. Your students will better grasp the Canadian grain export system and its function if you, as the teacher, study the game procedures well and preview the video. This game is at its best the second time around.

NOTE:

1. The video, while it is not heavily promotional, deals primarily with CN's role in grain transportation.
2. The MegaMachine describes only one method by which farmers market grain. They can also sell it for seed or feed, or they can feed grain to livestock themselves. Decisions on these matters are mainly based on the price being paid for grain. The farmer makes these decisions independently of the workings of the megamachine.

Procedure

Preparation

1. Book the video Marvelous Prairie MegaMachine, and reserve a VCR and monitor for the same day.
2. Photocopy the game cards on the Student Resource Sheets. You will want one per student. If there are more than 16 students you can vary the number of farmers to match your class size. If there are fewer than 16, reduce the number of elevator operators.
3. Cut the individual cards apart so students can draw roles to start the simulation.
4. Decide on groups for the introductory demonstration. (You can make each row a group if your class is in rows.) For each group you need a large empty container for one student and small containers filled with grain or rice for each other member.

Introduction

5. a. Explain the group arrangement to the class and give out the prepared containers.
b. Ask students to predict how much grain each group has and how much the class has altogether.
c. Have each supplier pour his/her grain into the group receiver's beaker and estimate their group's volume of rice.

- d. Have the receivers from each group pour their grain into a final container on the teacher's desk and estimate the total volume for the class.
6. Explain to the students that they will be watching a video that illustrates another example of how wide spread small supplies can add up to a vast amount. Explain that this shows one way rural communities interact with communities throughout the world. Stress that they should pay attention to what individuals do in the system.
7. Play the video for the class. (Running time is 25 minutes.)
8. Prepare the flow chart, Student Resource Sheet One, on a bulletin board. This will help the children understand the complex communication routes. Read Student Resource Sheet Two, "How the MegaMachine Works", with students.

Activity

9. Have each student draw a card to establish their roles for the simulation.
10. Have students read their cards aloud following the sequence on Teacher Resource Sheet One, so that everyone will know what roles will be played out.
11. Play two rounds of the game, proceeding slowly enough that students can follow the sequence of events.
12. If the class is large and has been divided into 2 groups, let the second group play the game.

Conclusion

13. Once the game is completed have the students describe how a grain farming community in Alberta is affected by actions in Winnipeg and even in capitals of other countries.

Discussion Questions

1. What does the farmer do while waiting for a call to deliver grain?
2. Which information links help the farmer decide what crops to plant?
3. In this game, a lot of money goes to each farmer. Where do you think a farmer has to spend money in order to keep operating?

Related Activity

1. Draw the Marvelous Prairie MegaMachine identifying the engine, transmission and output.

SHEET ONE —

Real Rules for a Simulated Game

**Preparation:**

Push classroom desks to sides of room. On the floor use yarn to outline the four western provinces with boundaries between them. Using construction paper, mark the locations of Winnipeg, Manitoba, four grain elevators in Saskatchewan and Alberta, and a grain terminal elevator on the B.C. coast.

1. Roles are distributed by lottery draw. They may be redrawn at your discretion.

Student roles include:

- 6 - 8 Farmers
- 4 Elevator Operators
- 2 Railroads
- 1 Canadian Wheat Board
- 1 Grain Terminal Operator
- 1 Ship's Captain

2. The teacher acts as a customer.
3. The customer starts a round by notifying the Canadian Wheat Board that they will buy some amount of wheat.

Teacher:

In real life, farmers get to deliver grain 6 - 8 times per year. Each of your students has 1000 tonnes of grain to sell. Set your order size by 100×-6 and -8 for the upper and lower limits.

4. Now proceed in order as described in "How the MegaMachine Works (Student Resource Sheet Two)." Students will move through the map to fulfil their roles.

Note:

- a. The elevator operators must divide the amount of wheat they are buying equally between all the farmers. They must also pay them a \$140 cheque for each tonne they buy.
- b. The Canadian Wheat Board must divide the amount of grain sold by the available elevators (4).
- c. Grain Transport Agency must divide number of tonnes sold by 70 to determine the number of hopper cars needed.

5. A round ends when an order is loaded onto a ship.
6. Have farmers count how many cheques they received. Total the money earned. Did they sell all their grain?

Note:

Some students may require help with math calculations.

7. Grain elevators estimate that a farmer will produce about 1 tonne per acre (therefore 2.5 T/Ha).

Note:

Most farmers continue to calculate their work, land and produce in bushels and acres, although sales to elevators are in tonnes. We have used $1 \text{ Ha} = 2.5 \text{ acres}$ as a conversion factor.

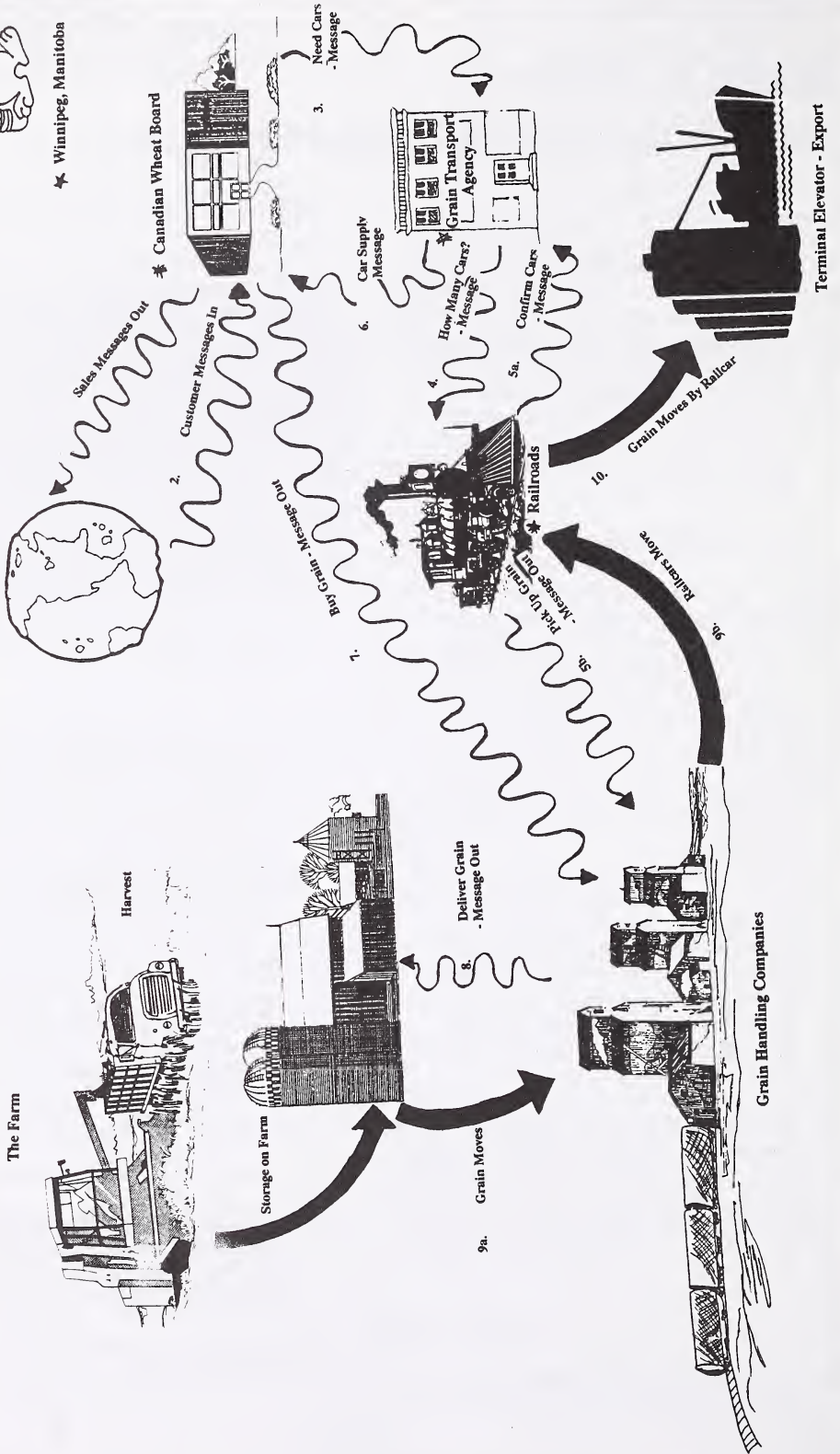
8. A modern grain elevator holds 6400 tonnes.
9. A railcar can carry a maximum of 71 tonnes. Cars may be run with partial loads if a section of track will not support 71 T/car. For easy division in the simulation, cars are filled to 70 T.
10. A typical bulk grain ship carries up to 50-80,000 tonnes.

STUDENT RESOURCE

SHEET ONE — Flow Chart The Working Parts of the MegaMachine



★ Winnipeg, Manitoba



SHEET TWO —

How the MegaMachine Works



1. a. Farmers harvest the grain. The total harvest results in a surplus (more than Canadians need).
- b. The Canadian Wheat Board, the sales representative for Canada's surplus, sends a message to world markets that Canada has wheat to sell.
2. World buyers send in orders and request to have grain shipped.
3. The Canadian Wheat Board calls the Grain Transport Agency (e.g. CN Railway). They tell them that railway cars (hoppers) will be needed to take grain from prairie elevators to a grain terminal to be shipped overseas. They tell the GTA how much wheat has been sold so they can figure out how many cars are needed.
4. The GTA tells the Railroads how many cars are needed to pick up the grain.
5. a. & b. The Railroads agree to send enough hoppers to pick up the grain.
6. The Grain Transport Agency tells the Canadian Wheat Board how many hopper cars are leaving to pick up the grain.
7. The Wheat Board calls the Grain Handling Companies (grain elevators) to buy grain from the farmers.
8. The grain elevators call the farmers to bring in a certain amount of wheat.
9. a. & b. The farmers bring the wheat to the elevators. At the elevators, it is loaded into the hopper cars.
10. The grain moves by train to the correct terminal elevator. At the terminal, the grain is shipped overseas to the country that bought it.

STUDENT RESOURCE

SHEET THREE — Game Cards



Grain Farmer

You have 1000 tonnes of wheat to sell. Your elevator manager will call whenever he needs some of your wheat.

100	100	100	100	100
T	T	T	T	T
100	100	100	100	100
T	T	T	T	T

Grain Farmer

You have 1000 tonnes of wheat to sell. Your elevator manager will call whenever he needs some of your wheat.

100	100	100	100	100
T	T	T	T	T
100	100	100	100	100
T	T	T	T	T

Grain Farmer

You have 1000 tonnes of wheat to sell. Your elevator manager will call whenever he needs some of your wheat.

100	100	100	100	100
T	T	T	T	T
100	100	100	100	100
T	T	T	T	T

Grain Farmer

You have 1000 tonnes of wheat to sell. Your elevator manager will call whenever he needs some of your wheat.

100	100	100	100	100
T	T	T	T	T
100	100	100	100	100
T	T	T	T	T

Elevator Operator

When the Wheat Board tells you how much grain you can buy, you must divide that amount equally among your farmers and tell them how much they can deliver. You must pay them \$140 per tonne.

Elevator Operator

When the Wheat Board tells you how much grain you can buy, you must divide that amount equally among your farmers and tell them how much they can deliver. You must pay them \$140 per tonne.

Grain Terminal Operator

1. When trains of grain arrive you must empty each car into your storage bins until they are full.
2. When ships arrive you must fill them with grain unless your bins are empty.

Ship's Captain

When your home country buys wheat from Canada you must go to the Grain Terminal Elevator to have your ship filled, then carry the grain to your customer.

STUDENT RESOURCE

SHEET FOUR — Game Cards



Canadian Wheat Board

When a customer buys wheat you must:

1. Tell the Grain Transportation Agency how much needs to be moved.
2. Divide your sale by our available elevators and tell each one how much they can buy.

Grain Transportation Agency (GTA)

When the Wheat Board calls about a sale, you must:

1. Divide the sale by 70 to find out how many railcars are needed.
2. Tell each railroad how many cars they must provide and where to send them.

Railroad One

1. When the GTA tells you where cars are needed you must deliver empty cars there.
2. When the cars are full you must move them to the costal terminal elevator.

Railroad Two

1. When the GTA tells you where cars are needed you must deliver empty cars there.
2. When the cars are full you must move them to the costal terminal elevator.

WHEAT BOARD OF CANADA

Pay to the Bearer _____ \$ 140.00

One Hundred and Forty ----- xx Dollars

The Elevator Operator

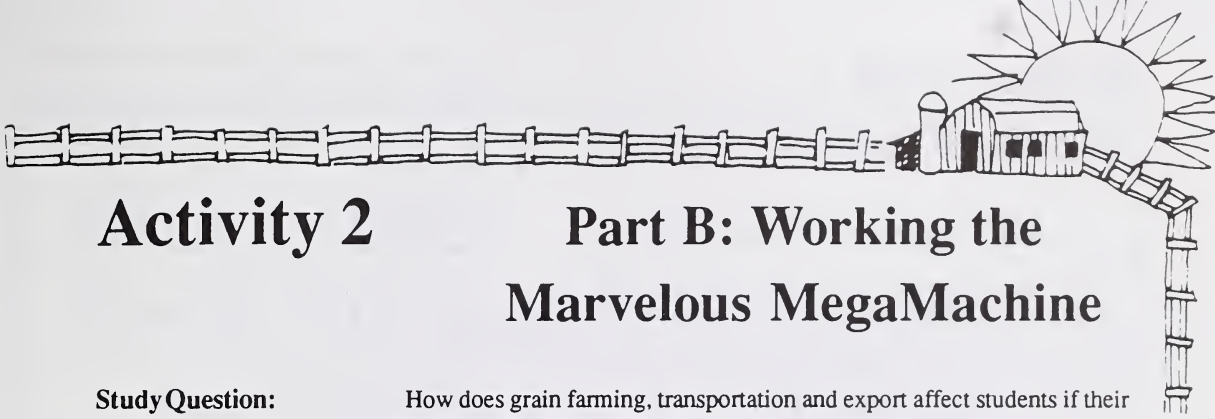
WHEAT BOARD OF CANADA

Pay to the Bearer _____ \$ 140.00

One Hundred and Forty ----- xx Dollars

The Elevator Operator

Maximum 10 cheques per farmer



Activity 2

Part B: Working the Marvelous MegaMachine

Study Question:	How does grain farming, transportation and export affect students if their families are not in the grain business?
Activity:	Students role play the benefits from national transportation links spreading beyond primary producers to whole communities.
Curriculum Fit:	Grade Four - Social Studies <ul style="list-style-type: none">• Self-sufficiency/Independence• Explore the benefits Alberta derives from its links with other parts of Canada and the world.
Agriculture Concepts:	Economic Importance
Purpose:	To have students experience how money earned in grain exports moves through the economy.
Materials Required:	task sheets provided supply of blank paper \$140,000 play money per farmer
Time Required:	Two 50 minute periods.

Background -- For the Teacher

This activity demonstrates what happens to farm income.

It will be most effective if your class does it immediately after the activity, Working the Marvelous MegaMachine. In Working the Marvelous Megamachine, students acting as farmers receive \$140 per tonne of grain sold. If all of their grain is sold during your simulation this will total \$140,000. In this activity your student farmers will pay their bills. You can run Part B of the exercise independently by simply telling the student farmers to begin with \$140,000.

The figures used here are reasonable estimates of the operating costs of average wheat farmers. The figure for mortgage payments represents an 11% interest rate on a mortgage of about half the 1988 start up costs for a farm this size. The total income is based on the 1987 final Canadian Wheat Board price for #1 Northern Hard Red Spring Wheat and an average crop from a six quarter section (384 hectare) farm.

Students should benefit from this activity in two ways. First, they will see the cash squeeze that results from low prices paid to the farmer; and secondly, as they follow the money paid through the next spending stage, they will see how money earned in grain exports benefits people throughout the province.

Procedure

Preparation

1. Photocopy Student Resource Sheets Four to Six and cut the cards apart so that students can play the game.
2. Photocopy the Student Resource Sheets as follows:
Student Resource Sheet One - 1 per student
Student Resource Sheet Two - 1 per supplier
Student Resource Sheet Three - 1 per farmer

Introduction

3. Ask the students who were farmers in Activity 1 - Working the Marvelous MegaMachine - to tell the class how much they were paid in total, and how much their entire crop was worth.
4. Explain that in this exercise students will see what happens to all the money that goes to a farmer.
5. Have those students who are not acting as farmers draw a role card from this lesson.
6. Students brainstorm a list of what a family spends money on. Copy the list onto Student Resource Sheet One.

7. Have student suppliers make out bills for each of the farmers in the amount owed.
8. Have the student suppliers move among the student farmers, presenting bills and receiving cheques or play money.
9. Once all the bills are paid, distribute Student Resource Sheets One and Two to the appropriate students and have them record their transactions.

Conclusion

10. As soon as the recording is completed lead the class in a discussion focusing on:
 - a. How did the farmer do financially?
 - b. How does the money earned by the farmer reach the other members of his or her community?

Discussion Questions:

1.
 - a. Did the farmers in this exercise make enough money?
 - b. How much would the farmers need to be paid per tonne of wheat to pay all their costs with 1000 T production?
 - c. How much would the farmers need to increase their production to meet their costs at the price of \$140/T?
 - d. If all the events of these lessons were true, and you were the farmer, what would you do to pay your bills?
2.
 - a. How many businesses does it take to supply the things listed here?
 - b. What kinds of things would be paid for as family living expenses by the farmers and suppliers in this activity?
 - c. How many more businesses does it take to supply these items?

Related Activities:

1. Ask local businesses how they are affected by increases and decreases in farm income.
2. Invite a guest speaker to talk about how farms make and spend money.
3. Collect news articles and other information on how farming and rural towns are linked physically, economically and by communications to each other and to far away places.

List ten or more things that a family spends money on.

[illegible]

SHEET TWO --



Supplier's Income and Expenses

INCOME

A. NUMBER OF CLIENT FARMERS: _____

B. AVERAGE BILL PER FARMER: _____

TOTAL INCOME (A x B): _____

EXPENSES

List five to ten items a business must spend money on.

STUDENT RESOURCE

SHEET FOUR -- Role Cards



BANK

Collect \$80,000 for mortgage loan for start up costs.

Collect \$3,000 for interest on an operating loan. (Money the farmer borrows to pay bills until he is paid for his crops.)

UTILITY COMPANIES

(electricity, telephone, natural gas)

Collect \$2,000 for utilities used.

ACCOUNTANT

Collect \$500 for preparing taxes and management advice.

LOCAL GOVERNMENT

Collect \$2,500 property taxes.

FARMER

Take \$18,000 for living costs.

Set aside \$27,000 into a machinery replacement fund. (This is 15% of the \$180,000 your machinery cost.)

INSURANCE COMPANY

Collect \$2,000 to protect against losses to fire, theft, accidents and liability for other injuries.

SERVICE AND REPAIR SHOP

Collect \$8,000 for gasoline, diesel fuel, motor oil and grease.

Collect \$5,000 for machinery repair.

ALBERTA HAIL AND CROP INSURANCE

Collect \$4,000 to protect against crop loss from hail, drought and insect infestations.

SEED SUPPLIER

Collect \$5,000 for providing seed for this year's crop.

CHEMICAL SUPPLIERS

Collect \$10,000 for fertilizer.

Collect \$8,000 for pesticides.

SHEET THREE -- Farmer's Expenses



BANK	
mortgage loan \$80,000	<input type="checkbox"/>
operating loan \$3,000	<input type="checkbox"/>

LOCAL GOVT	
property taxes \$2,500	<input type="checkbox"/>

FARMER	
living costs \$18,000	<input type="checkbox"/>
machinery fund \$27,000	<input type="checkbox"/>

UTILITY COMPANIES	
utilities used \$2,000	<input type="checkbox"/>

ACCOUNTANT	
preparing taxes and advice \$500	<input type="checkbox"/>

INSURANCE COMPANY	
insurance coverage \$2,000	<input type="checkbox"/>

SERVICE/REPAIR SHOP	
fuels \$8,000	<input type="checkbox"/>
machinery repair \$5,000	<input type="checkbox"/>

ALBERTA HAIL & CROP INSURANCE	
crop insurance \$4,000	<input type="checkbox"/>

SEED SUPPLIER	
seed for crop \$5,000	<input type="checkbox"/>

CHEMICAL SUPPLIERS	
fertilizer \$10,000	<input type="checkbox"/>
pesticides \$8,000	<input type="checkbox"/>

Income from the MegaMachine

Income from the Megamachine _____
 Minus Total Expenses _____
 Equals Amount Remaining _____

Farmer	
living costs	\$18,000
machinery fund	27,000
Local Government	
property taxes	2,500
Accountant	
preparing taxes and advice	500
Service/Repair Shop	
fuels	8,000
machinery repair	5,000
Chemical Suppliers	
fertilizer	10,000
pesticides	8,000
Seed Supplier	
seed for crop	5,000
Alberta Hail & Crop Insurance	
crop insurance	4,000
Insurance Company	
insurance coverage	2,000
Utility Companies	
utilities used	2,000
Bank	
mortgage loan	80,000
operating loan	3,000
Total Expenses \$	

TEACHER RESOURCE

SHEET ONE --



Case Study - Grain Farm

These cost figures were developed by Farm Business Management Branch, Alberta Agriculture, for a 1280 acre (512 Ha) farm in south-western Alberta. They were accurate in Fall 1988.

Revenue figures are based on the final price paid by the Canadian Wheat Board for the top grade of Hard Red Spring Wheat in the 1987 crop year.

START-UP COSTS

1. Land	\$ 400/ac
2. Water Well	\$ 5,000
3. Road	\$ 3,000
4. Natural Gas	\$ 3,000
5. Electricity	\$ 5,000
6. Phone	\$ 1,500
7. Sewage System	\$ 3,000
8. Mobile Home	\$ 15,000
9. Furniture/Appliances	\$ 7,000
10. Grain Storage	\$ 25,000
11. Equipment Storage	\$ 18,000
12. Grain Machinery	\$180,000
13. Truck	\$ 7,000
14. Fuel Tank, Tools, etc.	<u>\$ 5,000</u>
TOTAL	\$789,500

FIXED OPERATING COSTS (ANNUAL)

1. Land Taxes	\$ 2,500
2. Utilities	\$ 1,500
3. Licences/Insurance	\$ 2,000
4. Accounting Fees	\$ 500
5. Living Costs	\$ 18,000
6. Depreciation of machinery, 15% of value (not a cash cost)	\$ 27,000
TOTAL	\$ 51,500

VARIABLE OPERATING COSTS AND ESTIMATED REVENUES

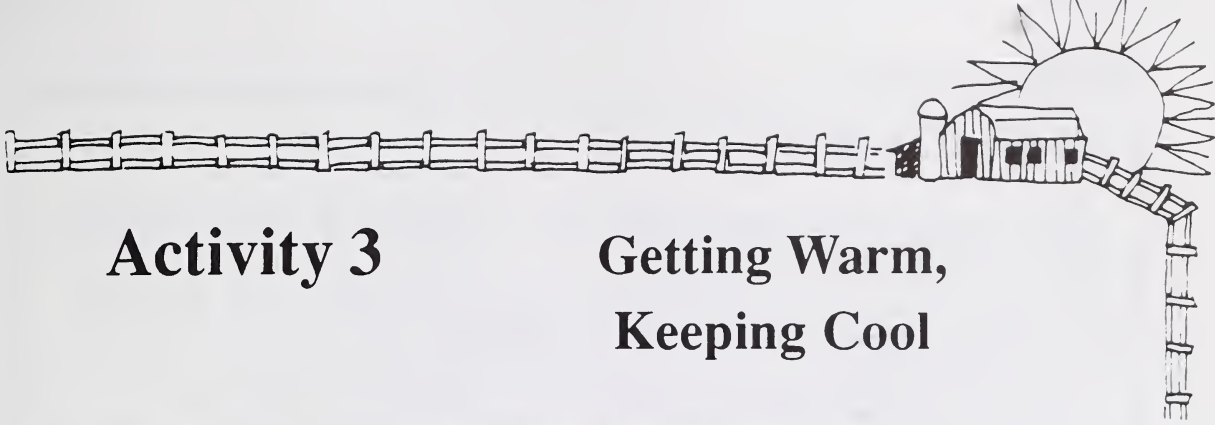
HARD WHEAT

REVENUE

1. 1988 final price	\$140/Tonne
2. Expected yield	1 Tonne/acre or 2.5 T/hectare
3. Revenue per acre	\$140.00
4. Total acreage	1000 acres or 400 hectares
TOTAL REVENUE	\$140,000.00

COSTS

1. Seed	\$10/acre
2. Fertilizer	\$12/acre
3. Chemicals	\$10/acre
4. Machinery-fuel & lube	\$ 8/acre
5. Machinery-repair	\$ 5/acre
6. Crop & hail insurance	\$ 4/acre
7. Interest on operating capital	\$ 3/acre
TOTAL	\$52/acre



Activity 3

Getting Warm, Keeping Cool

- Study Question:** Are there ways to heat buildings and save on fuel?
- Activity:** Students observe and record the results of a teacher demonstration, then apply the results to a real- life engineering solution to a problem.
- Curriculum Fit:**
- Division Two - Science**
- Energy resources and conservation
 - Heat exchange
 - Alternative energy sources
- Division Two - Language Arts**
- Read increasingly complex materials
- Agriculture Concepts:** Technological and Capital Intensity
- Purpose:** To illustrate agricultural engineering and explain the principle on which it is based.
- Materials Required:** air pump
hose or tubing
3 thermometers
water bath container
source of hot water
- Time Required:** One class period.

NOTE

An especially good idea for a science fair project.

Background --

For the Teacher

Agriculture, like the rest of contemporary society, is concerned with energy conservation and fuel efficiency. Students will observe how a producer, by developing a ground-to-air heat exchanger, was able to reduce his energy demands of heating and cooling air while still keeping his barn's internal conditions constant.

The demonstration apparatus allows students to observe directly an operating heat exchanger, this time water to air. If they are to benefit from their observations of these two cases, students must be led to the generalization that heat flows from a warmer substance to a cooler one if it is not blocked.

Procedure

Preparation

1. Construct an apparatus like the one shown on Teacher Resource Sheet One.
2. Make copies of Student Resource Sheet One for each student.

Introduction

3. Ask students for examples of one thing warming or cooling another.
4. Explain how your demonstration will work and ask the class what they think will happen to the air as it runs through the tube.

Activity

5. Assign students to read and record the thermometers.

6. Have a student turn on the hot water supply.
7. When the water bath fills begin pumping air through the tubing.
8. Have a student call out the time every 30 seconds from the start of pumping. Record each temperature at each time interval.
9. Continue pumping air (rotate pumpers if necessary) until the outlet air temperature remains constant for two minutes.

Conclusion

10. Pass out copies of the article on Student Resource Sheet One and have students read it.
11. Lead the class in a discussion of how the two cases are the same and what they tell us about warming and cooling things.

Discussion Questions:

1. How are our results similar to those in the farm engineering article?
2. Is it reasonable to guess that the same thing is happening in each case?
3. What are some other examples of this effect?
4. Can we propose a general rule (a hypothesis) for what will happen when a hot thing and a cold thing are near each other?

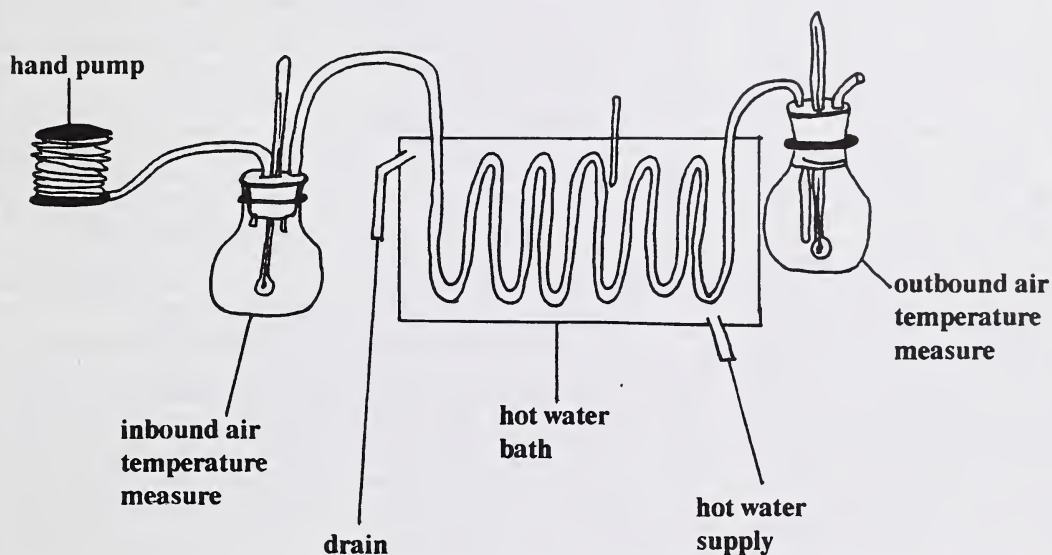
Related Activities:

1. Extend the study of heat to consider the transfer of heat by convection and radiation. (These examples show transfer by conduction.)
2. Investigate why constant temperature conditions are essential to some farm animals.



TEACHER RESOURCE

SHEET ONE -- A Water to Air Heat Exchanger



This apparatus is based on standard laboratory flasks, glass tubing, stoppers and so on. The same effect can be produced using old hoses. Remember that the thinner the hose walls the more the air will be warmed.

You must record the temperature of the air entering the exchange unit, the water in the exchanger and the air leaving the unit.

The final air temperature will vary with the water temperature, the wall material and the distance travelled inside the heat exchanger.



SHEET ONE -- Mother Earth blows hot and cold

Another way to reduce the heating bill

In 1986, Haynes, Alberta farmer Eugene Brown decided to expand his successful veal operation. But, to do so, he needed to increase the size of his barn, and its heating system was already taxed to capacity. He had almost resigned himself to the high cost (about \$15,000) of installing a second hot-water system when he read about earth-tempered air inlet systems in a farm magazine. While an earth-tempered system would cost about the same as a second hot water heater, in the long run it would be much less expensive and easier to operate. With the help of a grant from Alberta Agriculture's Farming for the Future program and technical assistance from Robert Borg, an Alberta Agriculture regional engineer, Mr. Brown was able to test and demonstrate this technology on his farm.

An earth-tempered air inlet system takes advantage of relatively constant soil temperatures below the frost line. At depths of about 12 feet (3.6 meters), the ground temperature ranges between 2.5 degrees C in early spring to 8 degrees C in early autumn. As a result, hot summer air can be drawn from the earth's surface,

passed through cool underground pipes, and then blown into a barn to maximize ventilation. And, in winter, cold air can be piped through relatively warm sub-surface soil to provide an inexpensive heating system. Mr. Brown found that by drawing air through about 150 feet (45.7 meters) of underground pipe he could warm or cool the air by as much as 15 degrees C.

The earth-tempered system is not difficult to construct. It consists of an air inlet at the earth's surface, underground pipe and an intake plenum at the barn. The pipe is buried at 12 feet, with a one-degree slope. This allows condensation to flow towards the barn where it can be drained periodically with a sump pump.

After building the extension to his barn, Mr. Brown poured concrete for the plenum and installed his pipes, which took about one week. Fans were installed at the top of the plenum to draw air through the system. The air flows into the barn to an insulated, preheated attic (controlled by the hot-water system), and then it is distributed throughout the building by exhaust fans. In winter, Mr. Brown still needs to heat incoming air, but his original furnace can now handle all his heating requirements because the air supply is warmer to begin with. Since

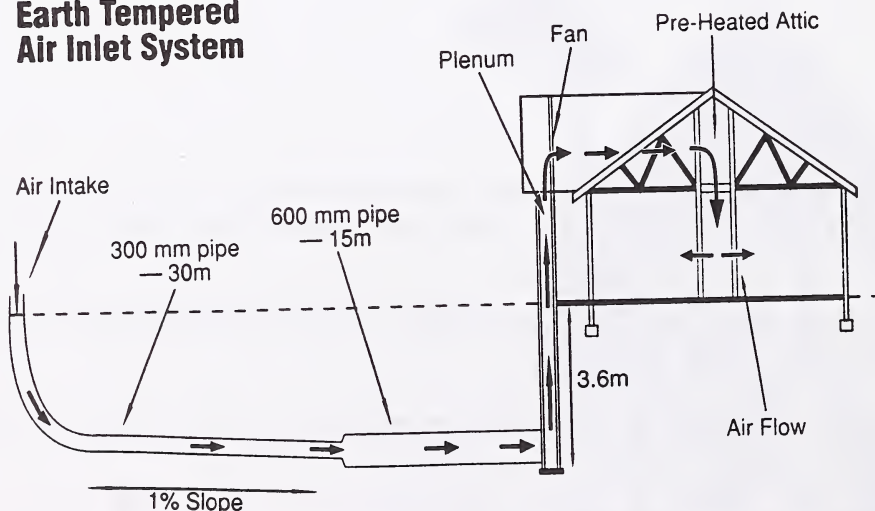
January 1987, typical air temperature modifications have been -20 degrees C winter air warmed to -2 degrees C, and 30 degrees C summer air cooled to 12 degrees C, and always with an improved ventilation rate and better air quality.

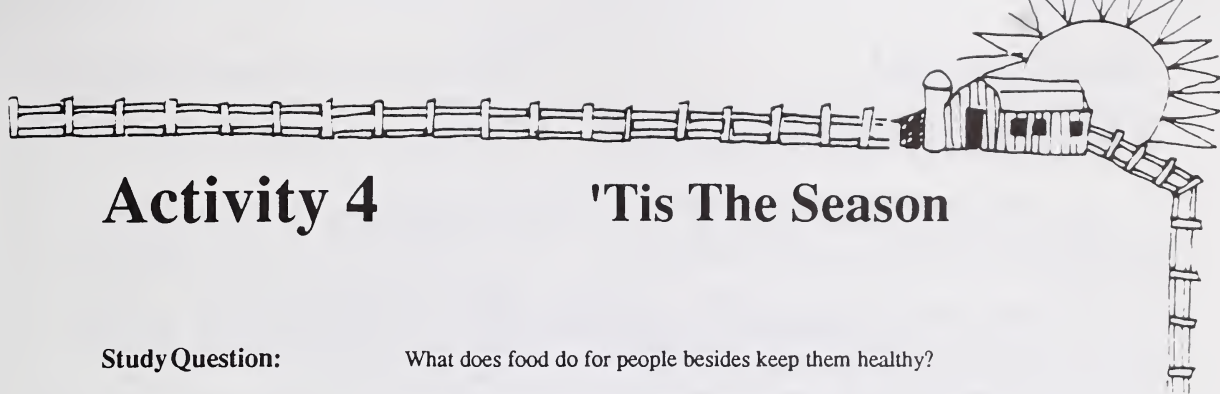
In addition to being able to heat a larger area without increasing his energy requirements and with no extra maintenance needs, Mr. Brown is also saved the task of wetting down his barn floor in summer to cool the calf rooms; the earth-tempered air does this job for him. The system also appears to have had a positive effect on animal health. Mr. Brown has noticed a drop in medication costs and death losses since he installed it.

What's more, says Alberta Agriculture's Robert Borg, "the technology is easily transferred to other types of barns. For example, summer cooling will improve breeding performance in a swine breeding barn. In a swine finishing barn, the extra feed and days to finish during hot weather may be avoided due to summer air cooling."

*Alberta Agriculture - Research Report
Volume 2 Number 6 July, 1988*

Cross Section, Earth Tempered Air Inlet System





Activity 4

'Tis The Season

Study Question:

What does food do for people besides keep them healthy?

Activity:

Students describe traditional family celebrations and any special foods associated with them.

Curriculum Fit:**Division Two - Language Arts**

- Describe events orally

Division Two - Social Studies

- Multiculturalism

Agriculture Concepts:

Diversity

Purpose:

To illustrate the symbolic aspects of food use.

Materials Required:

included in this activity

Time Required:

One or two class periods.

Background -- For the Teacher

The tendency to add symbolic meaning to basic activities is an important aspect of human behaviour. Eating, food choice and sharing are important to people of all cultures.

This activity is an opportunity to consider examples of holiday rituals based on food and, therefore, agriculture. It can be scheduled to coincide with a particular holiday if you wish, but you will need to ensure that celebration meals from minority cultures be included as part of the discussion.

Procedure:

Preparation

1. Choose a food that your own family serves on special occasions, and prepare to describe it to your students.
2. Make a copy of Student Resource Sheet One for each student.

Introduction

3. Ask your students what occasions their families celebrate with special meals.
4. Record the answers on the blackboard.

Activity

5. Distribute copies of Student Resource Sheet One to your class. Tell the story of your own family's celebration food.
6. Have students choose a particular food and complete the information on Student Resource Sheet One.

NOTE:

Your results will be most useful if no two students use the same food.

Conclusion

7. Have students explain the nature the holiday they are describing.
8. Have students calculate the total number of holidays celebrated by all the people in the class.

Discussion Questions:

1. How does having several holiday traditions make this a more interesting place to be?
2. How do the foods and condiments we use in our celebrations tie Alberta to the rest of the world?
3. How do some foods tie us to our ancestors?
4. Are there any holiday food traditions that are unique to Canada or to Alberta?

Related Activities:

1. Arrange with parents to have a holiday food sharing day in your school.
2. Investigate the history of a particular food.
3. Study how trade in particular foods began.



STUDENT RESOURCE



SHEET ONE --

My Family's Holiday Food

The Special Food is called _____.

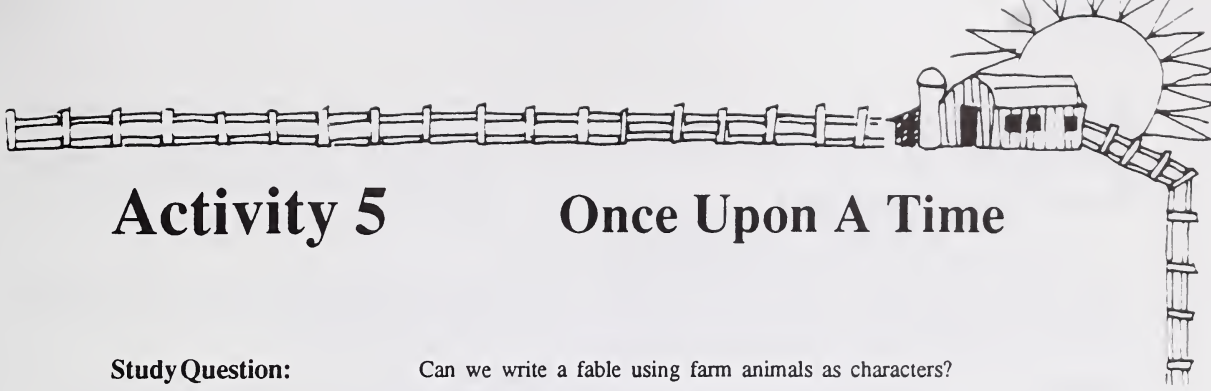
My family has it for _____.

Our special food is made from:

The ingredients for this food are grown in:

PLACE

INGREDIENT



Activity 5

Once Upon A Time

Study Question:

Can we write a fable using farm animals as characters?

Activity:

Students listen to a sample fable, list similar stories they know and write a story of their own.

Curriculum Fit:**Grade Four - Language Arts**

- Tell favourite stories in a variety of formats: fable.

Agriculture Concepts:

Diversity

Purpose:

To illustrate the long history of using agricultural animals to represent human traits.

Materials Required:

one or more sample animal stories

Time Required:

Two class periods.

Background -- For the Teacher

In this activity your students have an opportunity to write an original story in the style of one they have listened to or read. The fable is well suited to such an exercise as it can be quite short and its narrative is controlled by its message.

Procedure:

Preparation - Day 1

1. Find a fable that has an agricultural animal as its major character. (Three Little Pigs, for example.)

Introduction

2. Tell your students that they will be asked to write a story that teaches a lesson, and that you will start with an example.
3. Read the fable you chose.

Activity

4. Ask students if they know other stories that:
 - a. use animals as characters
 - b. attempt to teach a lessonObtain as long a list as possible.

- Note:** By this time most of the period will have been used. Allow students to think about their story overnight.
5. Have the students choose a farm animal to use as a main character and a lesson they want their story to teach.

Day 2

6. Have the class begin their stories and try to complete them within the period.

Conclusion

7. Lead students in a discussion of how animals are used to illustrate human behaviour.

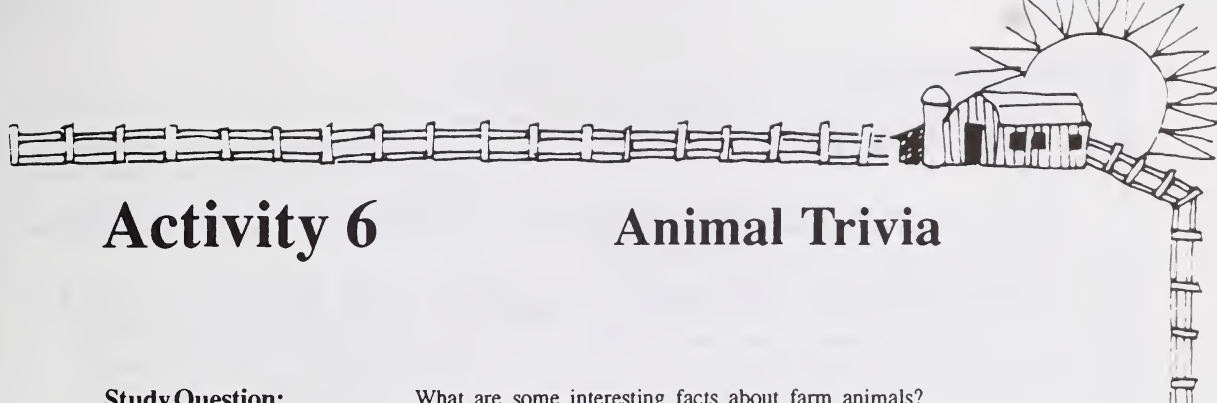
Discussion Questions:

1. What are some ways we describe people and what they do in terms of animals (strong as an ox, you turkey, etc.)?
2. Can anyone here make up new expressions like this?
3. Why do we say these kinds of things?

Related Activities:

1. Have groups of students act out their stories.
2. After reading a story involving farm animals have the students draw pictures of it.





Activity 6

Animal Trivia

Study Question:

What are some interesting facts about farm animals?

Activity:

Students play animal trivia.

Curriculum Fit:

Division Two - Social Studies

- Alberta past, present and future

Division Two - Science

- Living things and the environment
- In-depth life studies

Division Two - Language Arts

- Demonstrate growth in thought processes by perceiving and comprehending increasingly complex written descriptions, explanations and classifications.

Agriculture Concepts:

Economic Importance of Agriculture
Production, Processing and Marketing Systems
Diversity

Purpose:

To gain an appreciation of the importance of animals raised on farms.

Materials Required:

Farm Fair Research Project Outline (included)
Game (included)

Time Required:

One period for game.
Three or four periods for introduction.
One Day to attend and agriculture fair.

Background -- For the Teacher

Agricultural fairs and exhibitions can be an excellent class field trip to show students the agricultural industry in action. A major purpose of a fair or exhibition is to help members in the farming community stay in touch with producers and new products. Industries participate in order to make contact with clients and market their goods. Producers exhibit and judge their animals to establish standards of quality.

The public is also invited to attend these fairs. A fair provides students with an excellent opportunity to meet top quality farm animals. This is not meant to be a substitute for a farm visit, but does allow students to see another side of the agricultural industry.

Exhibits or fair dates are available by calling a local agricultural society or exhibition board. Most are happy to accommodate supervised school students.

In Edmonton, the Northlands Farm Fair (which begins on the first Friday in November and runs for 8 - 9 days) has set aside one day specifically for school children and their teachers. On "Coop and Coral Days", over 100 volunteers introduce children to the animals and explain the various aspects of the Fair. In the Edmonton area, call Northlands at 471-7260 for more information. A coordinator is available in September to answer any inquiries.

The Calgary Exhibition and Stampede Association puts on Aggie Days, a special farm fair for school children held in mid-April. Contact Lianne Enderton, Chairman for Aggie Days, at 261-0101 for further information.

Contact Ag In The Classroom for information on their annual Ag Ambassador School Fair. It changes location yearly.

A research project of farm fair animals is suggested so students can gain maximum benefits from a field trip to an exhibition. Both school and public libraries and the Department of Agriculture have ample reference resources for student use.

The Animal Trivia Game is then an excellent culmination activity to the study of farm animals.

Resources

Pigging Out On Pigs, K.G.R. Teaching Aids Inc., P.O. Box 934, Oshawa, Ontario, L1H 7N1

(An excellent whole language unit on pigs for grades 4-6.)

Pets and Farm Animals, The Encyclopedia of the Animal World, by Robin Kerrod

Procedure:

Preparation

1. Call an Agricultural Society to find out fair dates.
2. Arrange permission, funding and busing to farm fair if possible.
3. Make a copy of Student Resource Sheet One for each student.

Introduction

4. Students use the library to research one of the following farm animals - sheep, swine, poultry (chickens or ducks), rabbits, cattle. Completed assignments could then be presented to the class. This assignment can be done individually or assigned to groups of three or four students.
5. Class field trip to agriculture exhibition.

Activity

6. Play Animal Trivia as a fun enrichment activity or as a review for the topic of farm animals.
 - a. Divide class into two teams - A and B.
 - b. Have one person from Team A choose a picture from the deck of animal trivia cards. This will be the category for the Trivia question that person will answer. A person from Team B picks up the top card from that category pile and reads out loud the question for the Team A player. Teams alternate reading the questions.
 - c. For each correct answer the team scores one point. The game continues until each person has had an opportunity to answer a question.
 - d. The team with the highest score wins.

Conclusion

7. Have each student contribute a new question and answer to the Trivia game using the information from the research project.

Discussion Questions:

1. What animals were shown at the fair?
2. List three varieties of each animal you saw.
3. From what you observed, how do you think the animals were treated at the fair?
4. Which was your favourite animal? Why?

Related Activities:

1. Essay and class presentation.
2. Written answers to fair discussion questions.

STUDENT RESOURCE

SHEET ONE -- Agriculture Research Outline - Farm Animals



Choose from one of the following:

poultry (chickens or ducks)

cattle

sheep

swine

rabbits

Write a one or two page essay describing one of the animals above. Be sure to include:

1. History - Origins: Country? When?
When domesticated?
2. Physical description.
3. Varieties.
4. Importance in agriculture.
5. Other interesting facts.

Be prepared to present your essay to the class. Pictures of your animal would be very helpful.

EVALUATION:

Essay - 25 Marks

Presentation - 10 Marks

STUDENT RESOURCE



SHEET TWO -- CATTLE

Animal Trivia Questions

<p>Cattle were first domesticated:</p> <p>1000 years ago 3000 years ago <u>5000 years ago</u></p>	<p>The crossbreeding of beef cattle began in:</p> <p>2000 B.C. <u>1700s</u> 1960</p>
<p>Breeds of cattle are divided into _____ classes.</p> <p>two <u>three</u> four</p>	<p>Which of the following is not a beef cattle variety?</p> <p>Aberdine Angus Charolais <u>Muscovie</u></p>
<p>What animals are considered to be the most dangerous of all domestic animals?</p> <p><u>Dairy bulls</u> Hampshire bulls Beef bulls</p>	<p>Which of the following is not a beef cattle variety?</p> <p>Hereford Limousin <u>Hampshire</u></p>
<p>On the average, how many pounds of feed does a beef bull need to eat to gain one pound of meat?</p> <p>1 pound 10 pounds <u>20 pounds</u></p>	<p>Dual purpose cattle supply us with:</p> <p>milk and hides <u>milk and beef</u> milk and butter</p>
<p>Which one is not a dairy cattle breed?</p> <p>Guernsey Holstein <u>Angora</u></p>	<p>The earliest forms of cattle had:</p> <p>horns <u>no horns</u> short tails</p>

STUDENT RESOURCE



SHEET THREE -- SHEEP

Animal Trivia Questions

<p>Man first domesticated sheep:</p> <p><u>10,000 years ago</u> 3000 years ago 2000 years ago</p>	<p>Lambs can be marketed _____ after birth.</p> <p>one year <u>three to six months</u> two years</p>
<p>The selective breeding of sheep to improve the quality of wool began:</p> <p>200 years ago <u>3000 years ago</u> 2000 B.C.</p>	<p>Which of the following is not a sheep variety?</p> <p>Suffolk Hampshire <u>Simmental</u></p>
<p>Crossbreeding of sheep to provide a better quality of meat (mutton) began:</p> <p><u>200 years ago</u> 3000 years ago 2000 B.C.</p>	<p>Which of the following is not a grade of wool?</p> <p>Fine wool Crossbred wool <u>Capon</u></p>
<p>Australia and New Zealand based their economies on raising sheep because:</p> <p>It was the only animal they could afford to buy. They are the most beautiful animals around. <u>Wool is a product that can be transported great distances without perishing.</u></p>	<p>Which of the following is not a grade of wool?</p> <p>Long wool Fine wool <u>Yulouse</u></p>
<p>Wool can be sheared _____ a year.</p> <p><u>once</u> twice every other</p>	<p>One country which has based its economy on raising sheep is:</p> <p>Canada <u>New Zealand</u> South America</p>

SHEET FOUR -- HOGS



Animal Trivia Questions

<p>Pigs were first domesticated in:</p> <p>Europe 2000 B.C. <u>China 4000 B.C.</u> Britain 1700</p>	<p>Which of the following is not a hog breed?</p> <p>Landrace Yorkshire <u>Flemish Giant</u></p>
<p>Until 1940, pigs offered two qualities:</p> <p>Bacon and as pets Bacon and riding <u>Bacon and lard</u></p>	<p>Which of the following is not a hog breed?</p> <p><u>New Zealand</u> Lacombe Duroc Jersey</p>
<p>After 1940, consumers used _____ instead of lard.</p> <p>nothing butter <u>vegetable oil</u></p>	<p>Ancient wild pigs were:</p> <p>gentle lazy <u>tough fighters</u></p>
<p>Which of the following is not correct? After the demand for lard decreased, the new exotic breeds of pigs:</p> <p><u>had no tails</u> gained weight more quickly produced more lean meat on less food</p>	<p>Pigs like to eat:</p> <p><u>with other pigs</u> alone with humans</p>
<p>Which of the following is not a natural food to hogs?</p> <p><u>lions</u> foliage seeds nuts</p>	<p>You can see the difference between an old breed of pig and a new exotic breed by their:</p> <p><u>colour</u> tusks tails</p>

STUDENT RESOURCE



SHEET FIVE -- RABBITS

Animal Trivia Questions

<p>Rabbits have oversized ears which help them hear sounds hundreds of feet away. What else do their ears help them do?</p> <p><u>control body temperature</u> develop eating habits squeal</p>	<p>Which of the following is a breed of rabbit?</p> <p>Jersey <u>Flemish Giant</u> Mallard</p>
<p>Rabbits have 4 to 5 litters a year. How many babies do they have on an average?</p> <p>Two Five <u>Eight</u></p>	<p>Rabbits living in a pen can live up to:</p> <p>five years <u>ten years</u> two years</p>
<p>Which of the following is not a rabbit breed?</p> <p>Angora <u>Landrace</u> Flemish Giant</p>	<p>Rabbit eyes have:</p> <p>only side vision only front vision <u>a complete circle of vision</u></p>
<p>The other animal believed to be the oldest animal around besides the rabbit is:</p> <p><u>opossum</u> horse goat</p>	<p>Some people consider rabbits to be a sign of:</p> <p>bad luck <u>good luck</u> no luck</p>
<p>All rabbits seen at farm fairs are descendants of the wild European rabbit which was first domesticated in the sixteenth century in the country of:</p> <p>Germany <u>France</u> Spain</p>	<p>Rabbits digest their food:</p> <p>once <u>twice</u> three times</p>

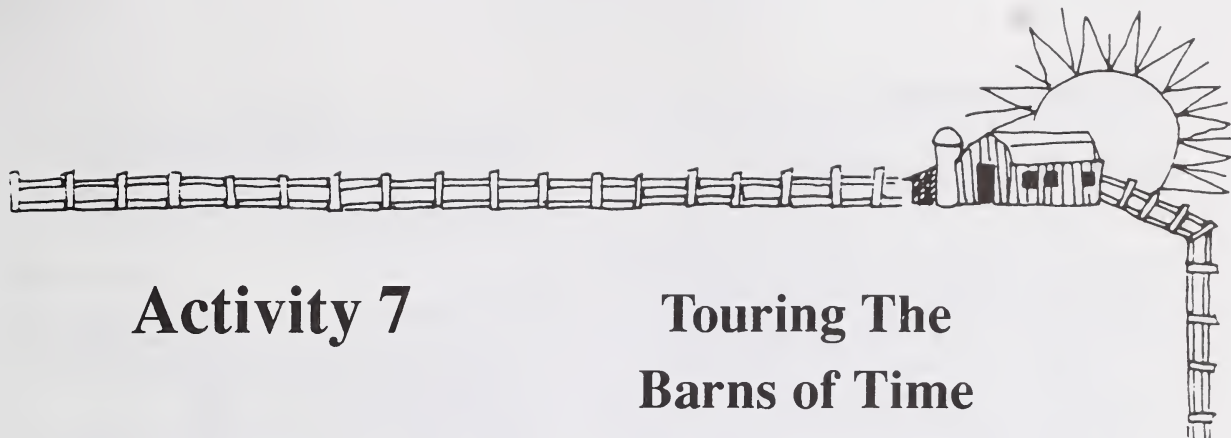
STUDENT RESOURCE

SHEET SIX -- DUCKS & CHICKENS

Animal Trivia Questions



<p>Ducks will lay _____ eggs than hens.</p> <p>more the same less</p>	<p>Which of the following is not one of the three types of chickens?</p> <p>meat egg producers dual purpose <u>racing homers</u></p>
<p>All domestic ducks are:</p> <p>no relation to the common Mallard not the descendants of the common Mallard <u>the descendants of the common</u> <u>Mallard</u></p>	<p>How many varieties of chickens in the world are there?</p> <p>10 <u>200</u> 2000</p>
<p>There are _____ common breeds of ducks.</p> <p>100 5 <u>12</u></p> <p>Ducks _____ make terrific guard birds</p>	<p>Dwarf chickens are called:</p> <p>feather weights pigeons <u>Bantams</u></p>
<p>by alerting people when intruders enter their property.</p> <p><u>do</u> do not</p> <p>Which of the following is not a duck variety?</p>	<p>Bantam chickens weigh from:</p> <p><u>1.5 to 3 pounds</u> 6 to 8 pounds 10 to 20 pounds</p>
<p>Muscovie Pekin <u>Angora</u></p>	<p>Chickens don't like the colour:</p> <p>red blue <u>yellow-orange</u></p>



Activity 7

Touring The Barns of Time

- Study Question:** How has the role of the horse changed? What does the changed role of the horse reveal about patterns of agricultural work and leisure?
- Activity:** Students will prepare and present radio plays dealing with changing farm life as it relates to the horse.
- Curriculum Fit:**
- Grade Four - Language Arts**
 - Use the appropriate forms of written language for clear communication
 - Speak fluently to present information
 - Grade Four - Social Studies**
 - Lifestyle, occupation, leisure time
 - Change over time (Alberta's past and present)
 - Division Two - Art**
 - Work with various mediums
- Agriculture Concepts:** Diversity
Capital and Technologically Intensive Nature of the Industry
- Purpose:** To give students an opportunity to discover historical development through creative expression.
- Materials Required:** drawing paper and art supplies
tape recorder and cassettes
optional - Pride in Alberta series (Available through Ag In The Classroom)
- Time Required:** Option "A" - four class periods.
Option "B" - three class periods.

Background --

For the Teacher

The first draft animals introduced to the prairies were oxen. They cost half the price of a team of horses and, with their natural ability to live off the land, they served the homesteader well. Mule teams were fairly common as well, however, the animal of choice was certainly the horse.

Horses could be obtained from the Plains Indians but they were of poor quality. Even though they were derived from Spanish stock, they had degenerated to rather poor specimens. The early immigrants could also purchase stock in Winnipeg or Brandon, but these were often low quality eastern animals, sold at exorbitant prices to the gullible and they often died within weeks of being sold.

The necessity of pulling seeders, ploughs, harrows and other implements from dusk to dawn, drew attention to the need for horses. While the controversy over all-purpose versus draft was common, the focus on an animal that could work in muddy, uneven terrain meant farmers were very concerned about breeding quality. Great concern and attention was paid to the horses, particularly pregnant mares.

Although having horses required early morning to late evening work, many felt that "the surest way of going broke was for a farmer to buy a racehorse, a stud-horse or a steam tractor."

Many of the early advances, such as the horse drawn reaper which replaced the scythe and the horse powered threshing machines, were seen as giant steps forward. But, by the 1950s, while 3000 horse drawn plows were bought in the west, only 17 were for use there, and the great pride that accompanied a skillful plowman was lost. In early days, plowing skills were a topic of conversation, and a poor plowman was spoken of in the same tones as a moonshiner or a horse thief.

Once again horses are becoming popular. Currently there are over 160,000 in Alberta, about double what was present when mechanization took over the horse's duties. Alberta not only raises some of the best draft horse stock in North America, we also raise about one-third of the horses registered in Canada every year. That is the largest number of pedigreed horses of any province. While cowboys still work with horses as they did in the 1870s, horses now are used overwhelmingly for recreation.

It should be noted that about 35,000 horses annually are slaughtered for export to Europe and Japan.

Procedure A:

Preparation

1. Copy Student Resource Sheets. Have large sheets of drawing paper and art supplies on hand. Have tape recorder and cassettes ready.
2. If possible, arrange for a field trip to a seniors lodge

to meet with some of Alberta's pioneers. Have students prepare questions for the interview. One sample question they can build from:

- a) How were horses used by you and your family as you were growing up?

Introduction

3. Have students interview the seniors about their experiences and/or read "Recollections of a Horseman: An Interview with Grant MacEwan." Discuss the changes in the role of the horse.
 - a) How were horses used on farms?
 - b) How have machines replaced horses? What jobs have they taken over?
 - c) There are still a lot of horses in Alberta. What are they used for?
4. Review Student Resource Sheet Seven and read through. In the library, try to find some historical pictures of "horses at work". Make a list of the things they are doing. Refer to *Pride in Alberta* - the teacher's handbook for some additional historical pictures of the role of horses on Alberta farms.

Grade 4 - Lesson 1 pages 1.13, 1.14 - Lesson 4 page 4.10
Grade 5 - Lesson 12 pages 12.16, 12.17, 12.20
Grade 6 - Lesson 18 page 18.9

Discuss the present role of the horse.

 - a) What are horses still used for on farms?

Activity

5. Hand out Student Resource Sheets Two through Six and read through them. Arrange the class into groups and have them prepare scripts for a radio play based on one of the scenarios.
6. Students should begin by investigating the time period of their setting.
7. Have each group assign a narrator to present the setting and any background information they may have found during their research.
8. Students should stress the importance of the horse in their play and be certain they include someone to voice the horse's thoughts. Allow the students freedom to add new characters to their play.
9. To supply visual imagery, students can prepare large pictures to accompany their scripts. These can be displayed on flip charts and the scenes changed during presentation.
10. Review the scripts with each group and give students time for practice. Include sound effects.

Conclusion

11. Record the completed play and present it to the class with the prepared pictures presented on a flip chart.
12. The audience could be encouraged to participate in the play as in a melodrama, responding to the horse's feelings.
13. As a class, prepare a brief report presenting "How The Role Of The Horse Has Changed."

Try This

14. You may wish to have one "horse" narrator who tells some anecdotes from years past. He recalls hearing stories from his ancestors. In this way, the plays can be linked together to give a brief history of the horse.

Procedure B:

Preparation

1. Copy Student Resource Sheets.
2. If possible, arrange for guest speaker to present "How Horses Were Used While I Was Growing Up".
3. Have each student prepare one question to ask the guest. If a guest speaker is not available students may be able to find the answers to the questions through class discussion or research.

Introduction

4. Bring in a guest speaker. Have students present their questions and/or read "Recollections of a Horseman: An Interview with Grant MacEwan."
5. As a brief review give students Student Resource Sheet Seven.
6. Discuss the changing role of the horse:
 - a) How were horses used on farms?
 - b) What kinds of machines replaced horses?
 - c) Are horses still used on farms?
 - d) What do the horses of today do?

Activity

7. Hand out Student Resource Sheets Two through Six. Arrange the class into five groups, each to do a different scenario.

8. Have the students develop a script to include each of the characters mentioned in their scenario. Include the horses and a narrator.
9. Review and practice the production - insert sound effects.

Conclusion

10. Each group will present their radio play to the class or record it on tape. Ask the audience to comment on how the horse would feel.

Discussion Questions:

1. In the very early days of Canada, what kinds of horses were being used by the explorers and pioneers?
2. How do you see the horse being used in Alberta today? On and off the farm?
3. Are there some places where animals are still used more than machines? Where? Why?

Related Activities:

1. Invite guest speakers to share their experiences in early Alberta.
2. Field trips to museums to see historical farm equipment.
3. Field trip to a farm or farm implement dealer to see new machinery.
4. Research early origins of the horse.
5. Field trip to a horse ranch or riding stable.



SHEET ONE -- Work Sheet



The Short Story

Setting

Description

Character Introduction and Description

Protagonist

Antagonist

Support Cast

The Plot

Action:

Climax:

Ending:

STUDENT RESOURCE

SHEET TWO -- Scenario A



THE SETTING

1870s

- South Central Alberta, open prairies, no fences, large herds of cattle grazing.
- the cowboys are sitting around the campfire eating supper.
- it is late and starting to get dark.
- they wonder how much longer the prairie will be open.

THE CHARACTERS

Bill

- has worked on the prairies for a long time. Now he is starting to think about settling down on a homestead. He treats his horse like an old friend and often takes part in rodeos showing off his skills.

Ernie

- the camp cook, is very old and doesn't plan on settling down ever. He figures ranching and being a cowboy is the best life possible. His wagon is pulled by 4 strong horses.

Sarah

- her dad owns the herd of cattle and she has just ridden out to see how they are doing.

Sugar Foot

- Bill's horse, has been with Bill all her life. Bill rode her mother until she was too old to carry him any longer. She listens to the people's conversation and takes in all that they say.

STUDENT RESOURCE

SHEET THREE -- Scenario B



THE SETTING

1890s

- a homestead in Northern Alberta, this is the family's second year.
- they are just finished breakfast and they are getting ready to go do their chores.

THE CHARACTERS

Ma

- a very pleasant woman, she had very great plans for her family and knows that hard work is involved.

Pa

- a slim but strong man, willing to work every day from dawn till dusk to provide for his family. Brought Ma from Europe to a better life.

Martha (12 years old)

- the oldest child, helps out in everything. She knows how important it is to get the work done.

Joseph (10 years old)

- the oldest boy, wants to be just like his dad. He can't understand why his father won't let him drive the team of horses by himself.

Big Red

- the largest of the family's three horses. He helped bring their belongings from out east and feels he is the most important member of the family. He has grazed close to the kitchen window and can hear all that they say.

SHEET FOUR -- Scenario C



THE SETTING

1920

- central Alberta.
- a fairly well established farm.
- they have just bought a gasoline tractor and are standing around it in the farm yard.

THE CHARACTERS

Ivan

- wasn't all that impressed with the tractor. He is the oldest brother and has always been a horseman. He feels that, for the money, you can't beat a good team of horses.

Jim

- the youngest brother was all in favour of buying the tractor. After watching a demonstration at the county fair, he pressured his mother to buy the tractor.

Mother

- handles all the finances since her husband died. She wants the farm to prosper and wants both boys to be happy and to farm with her when they grow up.

Buttercup and Buckskin

- one of Ivan's teams. They have only been together for a few years and are now worried about their future. What will happen to them if they aren't needed? How will Mother get into town to do the shopping if they don't pull the wagon?

SHEET FIVE -- Scenario D



THE SETTING

1941

- the war years. Much food is needed but few men are around to farm. Rapid improvements in farm machinery are occurring. The family is standing by the pasture fence watching the horses.

THE CHARACTERS

Grandpa

- was staying with Steve and Annie, his daughter, when Steve went off to war. He now helps out on the farm. Still hitches up the team to the carriage for the odd trip into town.

Annie

- was brought up on the farm and knows what has to be done. Her big concern is: What should be done with the horses now that they have the new combine and tractor?

Aunt Sally

- Annie's sister has also come to live on the farm again since her husband is also overseas. She brought her husband's truck (they used to do some hauling in the city) and her baby.

Melvin

- Annie's son, is in grade four and is proud of his dad. He listens to the news on the radio to keep track of what is happening. He also helps out on the farm and can drive all the farm equipment.

Dancer

- the old horse now is used only to take Melvin to his friend's house down the road. He stands in the field surrounded by the other horses and remembers how important they used to be.

STUDENT RESOURCE

SHEET SIX -- Scenario E



THE SETTING

Today

- a farm not far from a large city. The family specializes in wheat but keeps a few head of cattle on their marginal land. They also board horses for city folk and have several purebreds of their own. They are heading off to a local rodeo now.

THE CHARACTERS

Monica (13 years old)

- loves the horses and has entered her horse in several shows. She cares for most of the horses.

Dave (12 years old)

- has been trying to earn more money and thinks that taking city folks on trail rides around the farm might be profitable.
- thinks he might like to rodeo in his spare time.

Dad

- supports his children in almost all their ideas. Works hard on the farm and does some welding when work on the farm slows down.
- sees the horses as a novelty, not a real source of income, yet, wonders about expanding the horse herd.

Mom

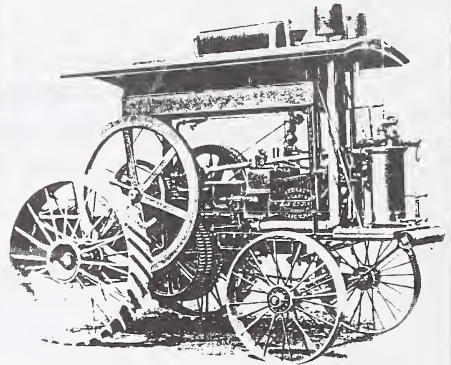
- has always loved horses. It was her idea to board the horses. Used to barrel race when she was younger. She rides horses out to check on the cattle (Dad drives the truck).

TEACHER RESOURCE

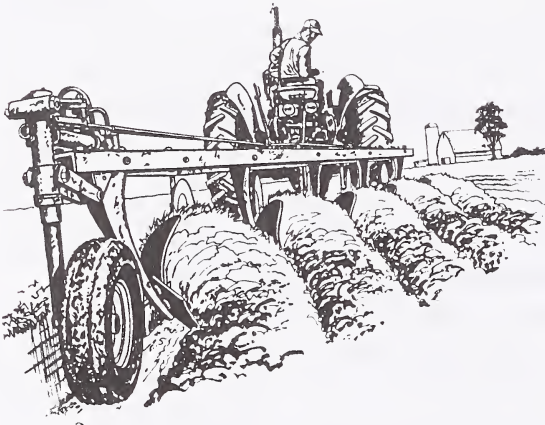
SHEET ONE



As early as 1900 steam engines began to be used on farms.



After World War II fewer and fewer horses were working on farms.



Since 1950 sport horses have become very popular for racing, rodeos and horse shows.



Today, Alberta is home for half of Canada's horses.

SHEET SEVEN -- Interview With Grant MacEwan



I was born into a society where the horses were crucial to everybody, not just the farmers, but the people in the towns and cities. Carrying the mail from the station to the post office was done with a horse and a dray, or two horses and a dray. Or if a gentleman, city businessman wanted to go for a drive on Sunday he hired a team of horses from a livery and he drove out into the country. Horses belonged to everybody and to have a few horse hairs hanging on your coat was no disgrace at all. You discussed horses, heavy horses, utility horses, in any company, any house, any dinner, any occasion. You talked horses.

I think power was the first requirement in early western days in farming and there was some question about what type of power would dominate. The oxen had their day, very appropriately. The big, dumb, lazy, faithful brutes deserved more recognition than they received. They fitted in in a time when homesteaders were getting started. They had no grain, they couldn't afford to buy grain, horses needed grain. Oxen, if they could get their bellies full of grass or hay would get by. The oxen could live off the land, and they did. And they served a big place. I am disappointed that we have lost our interest in the most humble farm power of them all, oxen. They served a purpose, and a crucial purpose.

The homesteaders, as soon as they had enough money, and enough cultivated land, would determine that they were going to get rid of their oxen. Oxen had no friends, they deserved friends, but they didn't have them. The first industry of any importance after the homestead years was the importation of work horses from Ontario. Generally old horses that had a foot in the grave, but they were still capable of doing something in harness. And then importing breeding horses from the States or France or Scotland or Belgium. Most of them were coming from Scotland. Just as soon as the homesteader was in an economic position to do it they either sold their oxen for meat or slaughtered them in the autumn and ate them and moved into horses.

And Western Canada became a land of horsemen, no question. And I think they were better horsemen than we have got today. The modern horseman knows more about showmanship and exportation, the proper clothes to wear in the ring and ring manners. He doesn't have the fundamentals that the old farmers had in my boyhood. Western Canada was a land of horsemen and most farmers were good horsemen. They were familiar with breeds, they knew about breeding, they didn't understand the science of nutrition, because nobody had heard about vitamins at that time. But they knew what caused the horse to have colic and they knew how to cure that problem. And they understood that the horse that had a bit of colic or was threatened with colic should be laid off rather than worked that day.

The horses had their share of abuse too, but they had a little more affection than the oxen had. Still there were too many farming people that knew the importance of the horse that didn't have very much respect for the horse. Cause when your work was done in the fall the horses were turned out to fend for themselves in the winter, paw snow and eat the grass. They got by, marvelously, and the farmers brought them in the last thing before seeding in the spring. They would have a heavy coat of hair on their hide backs, that might need to be clipped, otherwise they would die from exhaustion or sweating. They weren't ready to go to work, they had no hard grain in them.

The horsemen weren't unanimous. There were horsemen who gave their horses some comforts in the winter time. Maybe stable them at night, maybe give them a little bit of grain throughout the winter and their own hair grew better when the seeding time came. But there was a lot of horsemen that didn't. And there were some of those horsemen who I am critical of. When the horse was getting old and threatened to become inefficient as a worker they either shot them or sold them for horse meat

or let them loose. Maybe some of them joined wild horse bands and didn't live too long after that. We have an apology and we have a debt to the horses. I am thinking of, particularly, the heavy horses.

The modern light horses, predominant today, get good attention, get good care. Young people, they are mostly young, know what constitutes good care, they baby their horses, they groom them, they blanket them. They do a lot of things the pioneers didn't do, didn't have time to do, it wouldn't be practical for them to do it. I am glad that the day of the heavy horse has passed as we knew that day, when there wasn't much heaven for heavy horses, for work horses. There wasn't much feeling for them. They worked, and they worked hard, they were worked down to the bone. They were worked when they had sore shoulders and harness galls. They were worked sometimes when they were lame. The pioneers were great horsemen, but they were not unanimous and too many of them were not humane. For that reason I think it is a blessing that we no longer rely upon horses, or any animals to do the heavy work, the slugging, in the farming community. The heavy horses were the pioneers in Western Canada just as much as their owners were, just as much as the men and women who broke trails. Their part, I suspect, was just as important and they deserved a lot better then they got.

The ox remained a threat, not a very great one, but he still had a few friends into the beginning of the present century. There were still a few oxen in use in 1910. I remember threshing with oxen in 1920. But they were becoming conspicuous. The bigger threat at that time was the steam engine. Steam, nice power, power abundant, nobody suffering or using you. Big, slow locomotives that could cope with almost anything except wet ground. They would get into wet ground and they sank into the bowels of the earth. Then there was another kind of tractor originating, the gasoline tractor. The noisy tractor, the one that depended on the explosion of petroleum. The steam engine was quiet and gentle, almost silent, even when it was working. Then came the noisy one. But the noisy one came in handy weight sizes and by World War I there was a lot of interest in the small gasoline tractor, the happy farmers. The tractors were making competition for the horses. Some horsemen, even the ones that were breeding purebreds, and the ones that were importing stallions from overseas, wouldn't admit that the horse would ever be displaced by the tractor. It was almost heresy to suggest it. But the tractors were making inroads.

Then a big turn came in 1918, the last year of the war. The allied countries were all still short on food. They were saying food will win the war. I don't know if it won the war or not. It was a big factor to keep maintaining morale, keeping the soldiers fighting fit. There wasn't enough manpower left, most of the young fellas were in uniform. Farmers tried to expand, as they were asked to do. The government was pleading, try and give us more wheat, more bacon, more cheese, more anything that will fill our soldiers with food. They had a heck of a time. At government level they decided that if they had more tractors they could get more return from the limited manpower. One man could do more with a tractor than he could with a four horse team. The government of Canada, in 1918, contracted with Henry Ford to take the factory's entire output of a new tractor, a small four cylinder high speed tractor that contrasted to the heavy steam engines. Here is this new tractor that has three gears. The top speed was 10 miles an hour. Unheard of in mechanical power. People laughed at first, said "Oh well, it would be dangerous, it would rattle, it would fall apart." Well this new tractor was built on an entirely different concept and it didn't fall apart. The Government of Canada took the entire output, offered the tractors to the farmers of Canada, at cost. The Government decided to make the price uniform for farmers, wherever they were located and the price was

\$795.00 delivered.

The tractor would take the place of a four horse team and for every tractor that was sold, four horses lost their job. Either they were turned out to fend for themselves or they were shipped to the bush, there was still a demand for bush horses, or they were sent for horse meat, pet food. That was the first blow. The organized horsemen said the horse is not done yet, the horse would never bow to the tractors. Well, the horses were going to. Through the twenties, tractor sales were up in a lot of places. Tractor sales were higher, even higher, horses were becoming surplus, they were backing up in the ranches. Ranchers didn't like to take rifles and go out and shoot them on the field. Yet these horses were eating grass which had a value. They were pretty much worried.

During the depression there was no increase in breeding because we still had a big surplus, but there were a lot of horses that had been turned out, that were brought in and the old harness was greased up. They were put to use in the fields, some of them were hitched up to Bennett buggies, which consisted of the chassis of some old car. Farmers couldn't buy gasoline for their tractors, so they took the motor out, put a tongue on the front part and hitched a team of horses to a rubber tired buggy. Because Bennett was in power at the time of the direst depression, these were known as Bennett buggies and were hauled by horses that thought that they were supernaturated, or thought they were retired. A few of them were brought back.

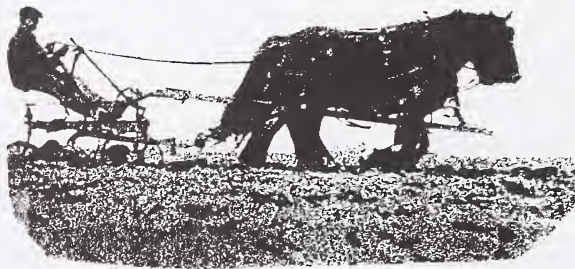
It came to 1940, the ranchers and some of the farmers who stayed with horses became a little desperate, these horses are no longer saleable, about a cent a pound, 12 or 15 dollars for a horse. If you didn't sell them for that, then they are going to continue to eat grass that could be converted to beef or lamb or mutton or something like that. Farmers and ranchers of Saskatchewan said, "Let's see what we can do."

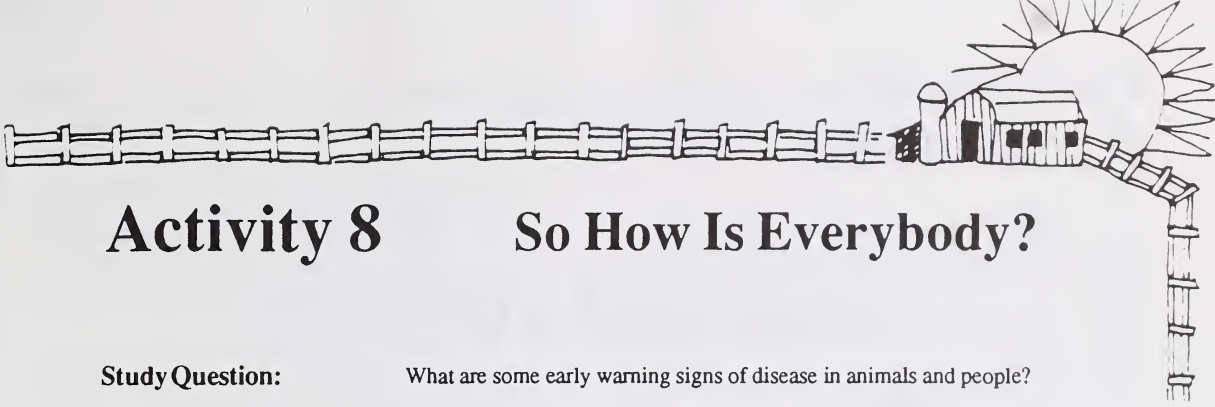
We were into another war by this time, the early 40's. The stories from overseas were that there would be mass starvation before the war was over in Europe and may continue for a while after the war. They said, "We are going to need wheat and we are going to need protein, we are going to need beef." People over there were accustomed to eating horses. "So why don't we decide to sell them some horses," the farmers decided. It wasn't easy to organize the sale of living horses, deliver living horses to Belgium, to France. So they organized, in the early 40's, to build or acquire horse plants, horse meat plants to be owned and operated by the producers, by the farmers and ranchers. The Saskatchewan or Western Canada Horse Cooperative acquired an old warehouse in Swift Current and converted it to a slaughtering plant. They made arrangements to take over an existing plant in Edmonton. They had a third plant someplace. They started gathering up surplus horses from the ranches and the farms. They would make a small payment, and the farmer was promised he might get a further payment later when the meat was sold. The idea was to put most of this meat into cans. Put the cans in storage

to be moved to Europe as soon as the war was over. The Canadian people had a chance at that time to start eating horses, they never took to it. It was too much like eating a hired man or a hired girl. It was true, for economic reasons, there was a place for some retail horse meat shops across Canada. Montreal had quite a few, the west had a few. To the Westerners credit, they just couldn't stomach the idea of eating a horse. But, they got rid of a quarter of a million horses or so and the people in Europe were grateful for the chance of getting meat, any kind of meat. High protein meat. That was recognition that the day of the horse, as the pioneers had known him, was gone.

There were a few people who remained true to work horses and said, "By golly, tractor or no tractor, we are going to keep our horses and we're going to work them. We'll try to work them decently, honorably, humanely, but, we're going to have them." A lot of farmers, particularly on smaller farms across the north in the late 40's and throughout the 50's, were still farming using horses. But, no matter how much enthusiasm the purebred breeders of Clydesdales, Percherons and Belgians had about the future, it was a limited one, a very limited one, as it is limited today.

I feel in my heart that a mixed farmer, a farmer on a family type farm could have, should have, at least two horses, two work horses with which to make hay, haul manure, move water if necessary. Do jobs that tractors could do but shouldn't do. What in the world were they doing using up the limited resources of gasoline to do jobs that the horses could do on fuel that is home grown. It didn't make sense, it still doesn't make sense. Well, we have seen the horse make a partial comeback. It's not like the old days, and it won't be like the old days and I hope it won't be like the old days. But it would have been a disaster if we had allowed the good stock of the leading heavy breeds to be lost and it came awfully close to being driven into extinction because of sheer indifference. Then people said, "We're out of breeding stock, we're out of good horses, we're out of show horses." For a time, a respectable horse of the draft breeds would bring \$5,000.00 or \$10,000 or maybe \$20,000.00. It was a family market, and there is still a market for them. Thanks to breweries, and that is something that we can thank breweries for, and thanks to the show men, exhibition people, I think there will be a continuing small market for high class show horses. Hopefully, there will be a bigger market when the people who say, "I'm mechanized, I'm going to do my field work with tractors, but I want two horses around to take me out in the mud when the tractor gets stuck or the car gets stuck, or haul the manure which came from horses or cattle. Why can't horses haul their own manure? Do handy work? If I were farming today, I'm not sure if I would have oxen or horses, but I sure would have one of them to do some of the menial jobs. They might be a nuisance at times if I wanted to go fishing or wanted to go on holiday. Horses can take care of themselves for a week or two, they're not a nuisance. They can be an inspiration and I think they can be an economy. I still think there are some jobs they can do more efficiently than the tractors can.





Activity 8

So How Is Everybody?

Study Question:

What are some early warning signs of disease in animals and people?

Activity:

Students develop a list of symptoms which they will use to monitor the health of their classmates.

Curriculum Fit:**Grade Five - Language Arts**

- Use the appropriate forms of written and oral languages: stories, directions, notes

Grade Five - Science

- Make qualitative observations, developing methods of classifying and recording data

Grade Five - Health

- Grow up healthy

Agriculture Concepts:

Diversity
Economic Importance

Purpose:

To demonstrate that successful farmers use similar methods for detecting health problems in their animals as those used for people.

To practice making observations.

Materials Required:

included

Time Required:

Two class periods plus 10 minutes a day for two weeks.

Background --

For the Teacher

A child with a recurring stomach ache is easily spotted in a class and an observant teacher will try to determine the significance of this symptom. Did it result from a fight? The flu? Is it an ulcer? Is the child hungry? Just as a child with a stomach ache stands out, so do some troubled animals.

A successful herdsman will develop the habit of monitoring his animals for the signs, actions or appearances, which may be clues to illness or injury. While some diseases have no visible early warning signals (eg. tuberculosis), many do.

The prompt diagnosis, isolation and treatment of the animal can result in ending the suffering as well as saving countless dollars. As the students consider the various symptoms and complications which may result from an animal's illness, they will be more aware of the concerns that a caring farmer will have for his stock.

Note:

We recommend caution when dealing with the health of the student population and trust the teachers sensitivity when dealing with asthma, diabetes, epilepsy, cerebral palsy or other conditions found within the school.

Procedure:

Preparation

1. Make copies of Student Resource Sheets One, Two and Three.

Introduction

2. Read Student Resource Sheets One and Two and look at pictures of sick or injured animals. Discuss what they notice. Have them use their own experiences or draw from other stories they may have read (e.g. Old Yeller).
3. Review the information on Teacher Resource Sheet One and have children make a list of symptoms that are associated with the following general observation groups:
 - a) General behaviour, actions
 - b) Appearance of skin, hair
 - c) Appearance of mouth, nose, eyes
 - d) Other - fever, heart rate, breathing, sweating
4. Bring out the class attendance record and discuss some of the absences that have occurred (being sensitive to problems of individual children). Ask "What happens to sick farm animals? Can they be absent from the pasture?"

Activity

5. Divide the class into four groups. Assign each group one of the categories of symptoms listed for animals. They will then make a list of human symptoms that may fit into their category.
6. As a class prepare a wall chart similar to the model in this activity, on Student Resource Sheet Three.
7. Have each group enter their symptoms in the appropriate column of the chart.
8. Over the next 2 weeks have the students, in their groups, make observations about their classmates each day and record them on the chart. If students are absent during this period, when they return to class, they should be interviewed by each group regarding their symptoms. Record the information on the absent column.

Conclusion

9. At the end of the two week monitoring period review the data on the chart.
10. Compare the findings to the animal symptoms given in the resource.
11. Lead the class in a discussion about their findings.

Discussions Questions:

1. What were the most common symptoms?
2. Were some symptoms misleading? (eg. sneezing)
3. Were some symptoms hard to check for?
4. How often were students absent because of illness?
5. What treatments were given for those with symptoms?
6. Why is early diagnosis a good thing?
7. Are some of our illnesses the same as those in animals?
8. Would our classroom be a good lot of animals for a farmer to have?

Related Activities:

1. Watch the film "How to Spot Health Problems by Observation" 1978, Cambridge Films.
2. Invite a veterinarian to discuss animal illnesses.
3. Students research various diseases and prepare reports.



SHEET ONE --



A Visit to a Hog Barn

The students of Mr. Meyer's grade 5 class were very excited about the field trip today. Many of them knew Mr. and Mrs. Phillips and looked forward to seeing if they had any new animals on the farm.

As Mr. Meyer's class poured out of the bus, the students moved into the groups they were assigned to and waited anxiously for further instructions.

"Come with me kids," Mr. Phillips said with a wave of his hand. "We'll go into my hog barns first. I've got some things to show you that I know you'll like."

"Not me," Ahmed whispered to Brian. "I bet it stinks."

As they entered the large building Mr. Phillips turned to Ahmed. "Well, what do you think?"

"No smell," said Ahmed surprised and looked around at all the fans mounted in the ceiling and walls.

"Hey, that pig hasn't got a tail!" shouted Julie. It was very noisy with the fans running and all those pigs.

Mr. Phillips laughed, "Is that right? Look again," he directed. "Sometimes pigs get their tails stepped on or bit, in these crowded pens. Then they can get infected. So, to prevent any chance of injury, we remove all their tails and pull their little needle teeth, just after they are born."

As they moved past all the crowded noisy pens full of snuffling pigs they came to some pens with only one pig in each.

"He sure doesn't look too happy," noted Sona, peering into one pen. "He looks just like my dog does when we take her in the car, then she drools and gets car sick."

"This one sure is slobbering," Brian said as he wrinkled his nose. "Oh, gross."

Kristie was over by another pen, "Come here little piggy, come here. This one won't get up Mr. Phillips."

"No he won't," replied Mr. Phillips sadly. "These guys are all in pretty rough condition. Some of them are getting medicine and some the vet will have to see. Every day I walk through the barns and watch the animals to see if they are eating, playing and sleeping all right. I see if they have sores or are too skinny. Happy pigs eat more and grow faster. You know how you feel when you're sick or hurt. Well, I worry about my pigs just like your folks worry about you."

"Now, let's move onto the next building. We've got some new piglets. Let's see if they are all doing okay."



SHEET TWO --

A Visit to the Horse Stables

Mrs. Phillips guided her groups over to the stables where some horses were eating. Others were out in the corral.

Nick climbed on the fence and was offering some grass he had pulled up to one of the horses. As it approached he noticed it was limping. "Hey, this one's got a sore foot."

"Yes," responded Mrs. Phillips. "She must have stepped on something in the pasture. See how she stands with one foot ahead of the other, kind of pointing with it. I checked the hoof earlier and it looks all right but we will have to keep an eye on her."

"How come that one is rolling around in the dirt?" asked Stacey.

"Well, let's watch for a moment and see. If she gets up and shakes off the dirt then she's probably just itchy. The bugs are kind of bad today. But if she paws at the ground and groans and maybe rolls some more then she might have colic, sort of like a stomach ache. Then we would have to watch her carefully to see why she's sick."

"She's up and shaking. I guess she's okay. Right?" asked John.

"I think you're learning to be a pretty good judge of horses." smiled Mrs. Phillips. "Let's take a look in some of the stables now," she said as she guided them into the barn.

"Boy, that one sure is sloppy. Look at all the food that falls out of its mouth. Kind of like my baby sister," Roger said pointing into one of the stalls.

"She may be having some teeth problems. I might have to go get a file to file down any sharp points. Since there's not a lot of slobbering there's probably no infection, but I will take a closer look later."

"It looks like they chew on the wood a lot," Sherri noted, running her hand over the boards of the stall.

"That's fairly common, same with rubbing on the boards. But we do start to worry if the horse sucks on the boards too much. It can cause problems with the teeth or stomach. If they rub too much and rub the hair right off it could mean they have a parasite. You know, ticks, fleas, worms or things like that."

"You really have to know alot about horses don't you?" Sona asked.

"Well, we have put a lot of time and money into these animals. When you're concerned about them and you want the best for them you make the effort to watch and note the changes. It really isn't work, but it is a daily activity," Mrs. Phillips responded as she led her groups towards the hog barns.

SHEET ONE --



Unusual Behaviour in Animals

While individual animals will each possess their own habits and behaviours, a skilled herdsman will make it a habit to note changes in these behaviours. Anything contrary to its nature may signal a problem.

The following information may aid you in guiding students with their lists of animal illness symptoms.

1) Behaviours

Sick animals tend to avoid others. They lack energy and often have a reduced appetite. They may have increased thirst or decreased urination. A face with a blank expression, sunken eyes or just a dejected look can all be signs of accompanying illness. Very sick animals will hold their heads down, droop their ears and may find moving very hard. Favouring limbs, keeping the body stiff, stumbling or arching the back can all be symptoms to note. Cattle often lie down but seldom on their sides. Rapid weight loss can be a symptom of many problems.

2) Appearance of Skin and Hair

General appearance of hair and skin also tells a lot. Open sores or ulcers should be cared for to prevent infection. If they reoccur something more serious may be developing. Parasites often cause scratching in the animal and bare spots may result. Hair loss can be a clue to other problems such as vitamin deficiency. The skin itself should be soft and pliable with a normal odor. Sick animals often have hard leather-like skin and an "odd" odor. Animals may also develop allergies or skin rashes. These may be minor reactions to plants in the pasture but should be monitored. Since cowpox are seldom visible anywhere other than teats and udders, a case for complete and careful observation is presented.

3) Appearance of Mouth, Nose and Eyes

Respiratory infections, like distemper, often cause a nasal discharge. However, an eye irritant may also make the nose run. Anything from wood splinters or thorns in the teeth to infections of the mouth, may cause an irritation which would trigger excessive salivation. A dry mouth, muzzle or snout may be a clue to a problem. In most serious diseases a fever would accompany the dry mouth.

When eyes lose their normal moist appearance trouble may be coming. Eyelids may become glued together with discharge as in hog cholera or the discharge may signal an infection such as pink eye. A foreign object, like dust or a bug, may also cause the eyes to tear.

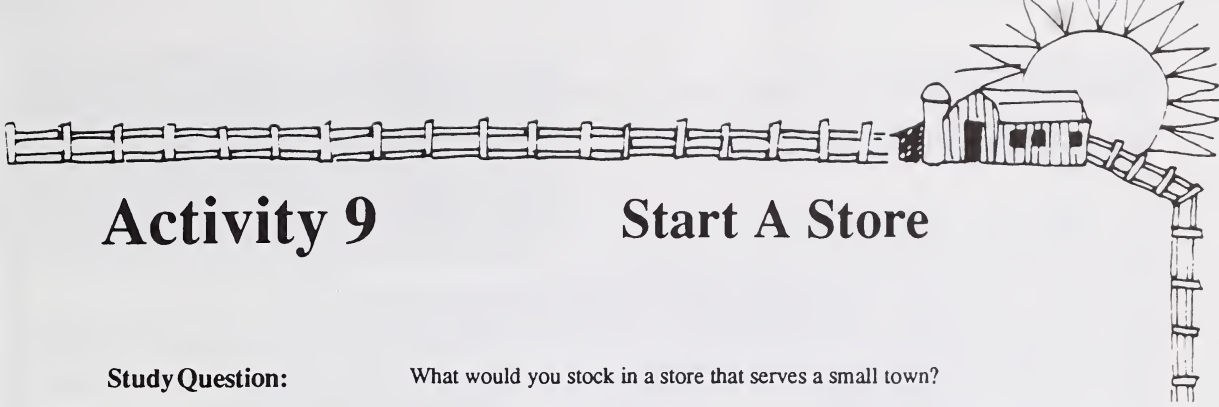
4) Other Characteristics

While animal temperatures will normally rise in hot weather, after eating or exercise, a successful farmer watches for signs of fever which may appear in association with other problems. Rapid breathing or heaving of the chest may also be associated with serious conditions.



SHEET THREE — The Health Watch

Day	General Behaviour Actions Examples:		Appearance of Skin & Hair Examples:		Appearance of Mouth, Nose, Eyes Examples:		Other	
	# of Students Affected At School	# of Students Affected Absent	# of Students Affected At School	# of Students Affected Absent	# of Students Affected At School	# of Students Affected Absent	# of Students Affected At School	# of Students Affected Absent
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								



Activity 9

Start A Store

Study Question:

What would you stock in a store that serves a small town?

Activity:

Students make lists of merchandise for a new store.

Curriculum Fit:

Division Two - Language Arts

- Speak and write fluently about increasingly complex subjects

Grade Four - Social Studies

- Topic B: Alberta's Past, Present and Future: Our Human Resources
- Lifestyle

Agriculture Concepts:

Economic Importance
Production, Processing and Distribution System

Purpose:

To identify our assumptions about rural lifestyle.

Materials Required:

included

Time Required:

One class period.

Background — For the Teacher

In this activity students are asked to choose the initial inventory for a small department store serving a rural community. Choosing the items for this store requires that students guess what people will want to buy. These guesses are inherently based on assumptions about customer lifestyle. Once students have made their stock lists, discussions should be directed towards analyzing what assumptions they have made.

Students will exercise skills in both spoken and written language with this lesson. The list making and store layout activities require group and whole-class discussions, allowing students to polish their skills in composing, delivering and answering oral messages. The concluding word portrait of customer calls are for individual composition and writing skills.

In terms of agriculture awareness, your students should increase their understanding of how service and support businesses interact with farm production.

Procedure:

Preparation

1. Photocopy Student Resource Sheet One - one per group. Photocopy Student Resource Sheets Two through Six -one copy of each (only one of these sheets to be given to each of the working groups).
2. Decide on the members or selection procedure for five working groups.

Introduction

3. Tell the students that they are to imagine they are starting a store in a small Alberta town. Their task will be to decide what their store is going to carry for sale.
4. Divide the students into groups and give each group one of Student Resource Sheets Two through Six.

Activity

5. Tell students they may have 15 minutes to list all the things they want to sell.

Note:

If any groups seem to have difficulty starting a list, first make sure members know what the department name describes, then have each member name an item he or she thinks is the most important for that department. They can repeat this process if ideas are still difficult to produce.

6. After 15 minutes call groups back together and have a member of each one read their list of merchandise.
7. Allow two to five minutes for students to suggest additions to other groups' lists.
8. Using the classroom as your store space, have the class decide how much space each department should have and where they should be located.

Conclusion

9. Ask each student to write a description of one person they imagine shopping at the class store.

Discussion Questions:

1. What do stores tell us about the lifestyles of people who shop there?
2. How do you think store owners decide what they should carry or sell?
3. Do you think farm and rural people need different things from a store than city people? Why or why not?
4. Are there things in our store that weren't invented when our parents were in Grade Four?

Related Activities:

1. Invite a store owner or manager to act as a guest speaker.
2. Ask students to make a map or a list of merchandise of a nearby store.
3. Have students survey their families or neighbors about what things they buy most often or spend the most money on. Analyse the resulting list and





SHEET ONE —

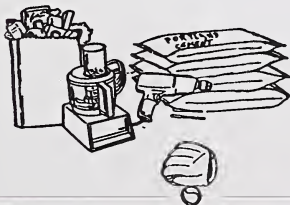
Community Profile

The town you are opening your store in has 500 residents.



There are 600 farmers in the district living closer to this town than to the nearest competing store.

The nearest city is 130 km away and has 43,000 people.



Your store should have five kinds of merchandise: food, housewares, hardware, building supplies and sporting goods.



SHEET TWO —

Grocery Department

Group members:

**In the grocery department
we will stock:**

A. Most important items:

B. Additional items:



SHEET THREE —

Housewares Department

Group members:

**In the housewares department
we will stock:**

A. Most important items:

B. Additional items:



SHEET FOUR —

Hardware Department

Group members:

**In the hardware department
we will stock:**

A. Most important items:

B. Additional items:

NOTE: Anything that becomes part of a building belongs in building supplies.
Tools and parts for machines are all hardware.



SHEET FIVE —

Building Supplies Department

Group members:

**In the building supplies
department we will stock:**

A. Most important items:

B. Additional items:

NOTE: Anything that becomes part of a building belongs in building supplies.
Tools and parts for machines are all hardware.



SHEET SIX —

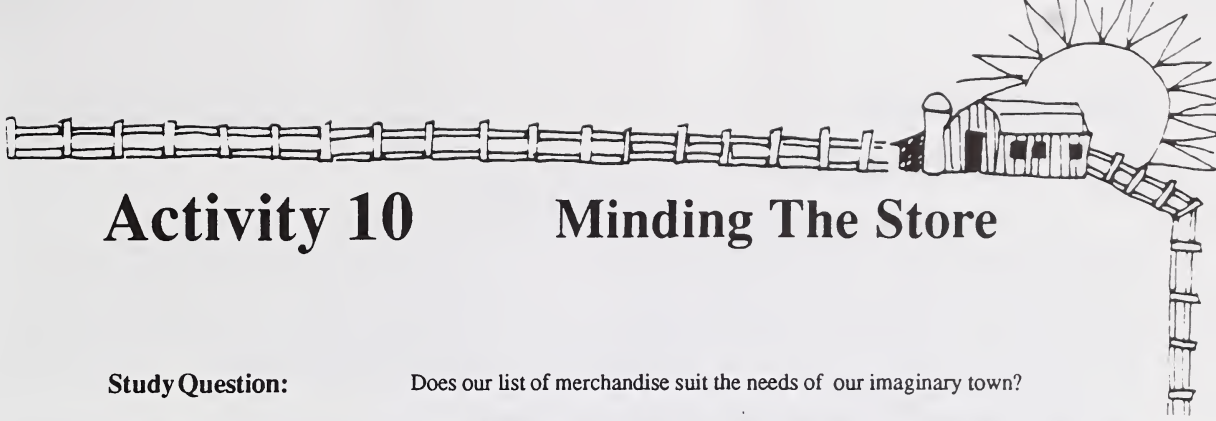
Sporting Goods Department

Group members:

**In the sporting goods
department we will stock:**

A. Most important items:

B. Additional items:



Activity 10

Minding The Store

- Study Question:** Does our list of merchandise suit the needs of our imaginary town?
- Activity:** Students act out the roles of store owner, customers and product sales representatives.
- Curriculum Fit:**
- Grade Four - Social Studies**
 - Topic B: Alberta's Past, Present and Future: Our Human Resources
 - Lifestyle
 - Division Two - Language Arts**
 - Speak and write fluently about increasingly complex subjects
- Agriculture Concepts:** Economic Importance
Production, Processing and Distribution Systems
- Purpose:** To compare a chosen list of merchandise with requests from customers.
- Materials Required:** included
- Time Required:** One class period.

Background — For the Teacher

In the activity Start a Store, students chose items to stock a rural store. Like any real-life business person would do, they began with their own best guess at what people would want to buy. Today they will evaluate the accuracy of their predictions by attempting to fill several shopping lists and deciding whether to add items to their inventory.

Most of the interactions in this activity are oral, so students will develop their skills in developing, delivering and answering oral messages.

The shopping lists were selected to include realistic requests of rural customers. Comparing these requests with the stock they chose should allow students to recognize what assumptions they hold about farm communities and how accurate they are.

NOTE:

If your students' lists have included general categories like "nails" or "fishing equipment" and the shopper requests "3-inch (90mm) zinc-coated, twisted nails" or "6-foot (2m) spinning rod and open faced reel for left hand" have them call that a correct stocking decision and supply the customer. They can then add the specific object as a sub-list inside their original category.

Procedure:

Preparation

1. Photocopy Student Resource Sheets One through Six (shopping lists and product descriptions) and cut them apart.
2. Choose a way of dividing the class into two groups, such that each group includes members who worked on each of the original department lists.

Introduction

3. Explain that, like any retailer, your students must evaluate their initial inventory against what people buy.

4. Divide the class into two groups and explain the activity sequence as illustrated in Teacher Resource Sheet One.

Activity

5. Allow the groups to confer briefly.
 - a. Group B selects three shopping lists and three product descriptions from the respective piles.
 - b. Group A responds to the shopping list items with one of the answers on your reference sheet, and to the salesman with yes or no.

Note:

Since store size is fixed, saying yes to a new item means dropping something else from the inventory.

6. After 15 minutes reverse group roles, giving Group A the remaining shopping list and product cards, and Group B the decision-making function.

Conclusion

7. Lead a discussion, based on the questions below, reviewing the accuracy of the first shelf-stocking decisions and what misconceptions might be revealed by the activity.

Discussion Questions:

1. What fraction of the total requests for merchandise were we able to supply from our original stock lists?
2. How could we have found out more about our customers before we made our lists?
3. What did we think about lifestyle, work and leisure in small towns and on farms when we made our lists?
4. What did the shopping lists we had to fill tell us about lifestyle, work and leisure in small towns?
5. How did we decide whether to say "yes" or "no" to a new product?

Related Activities:

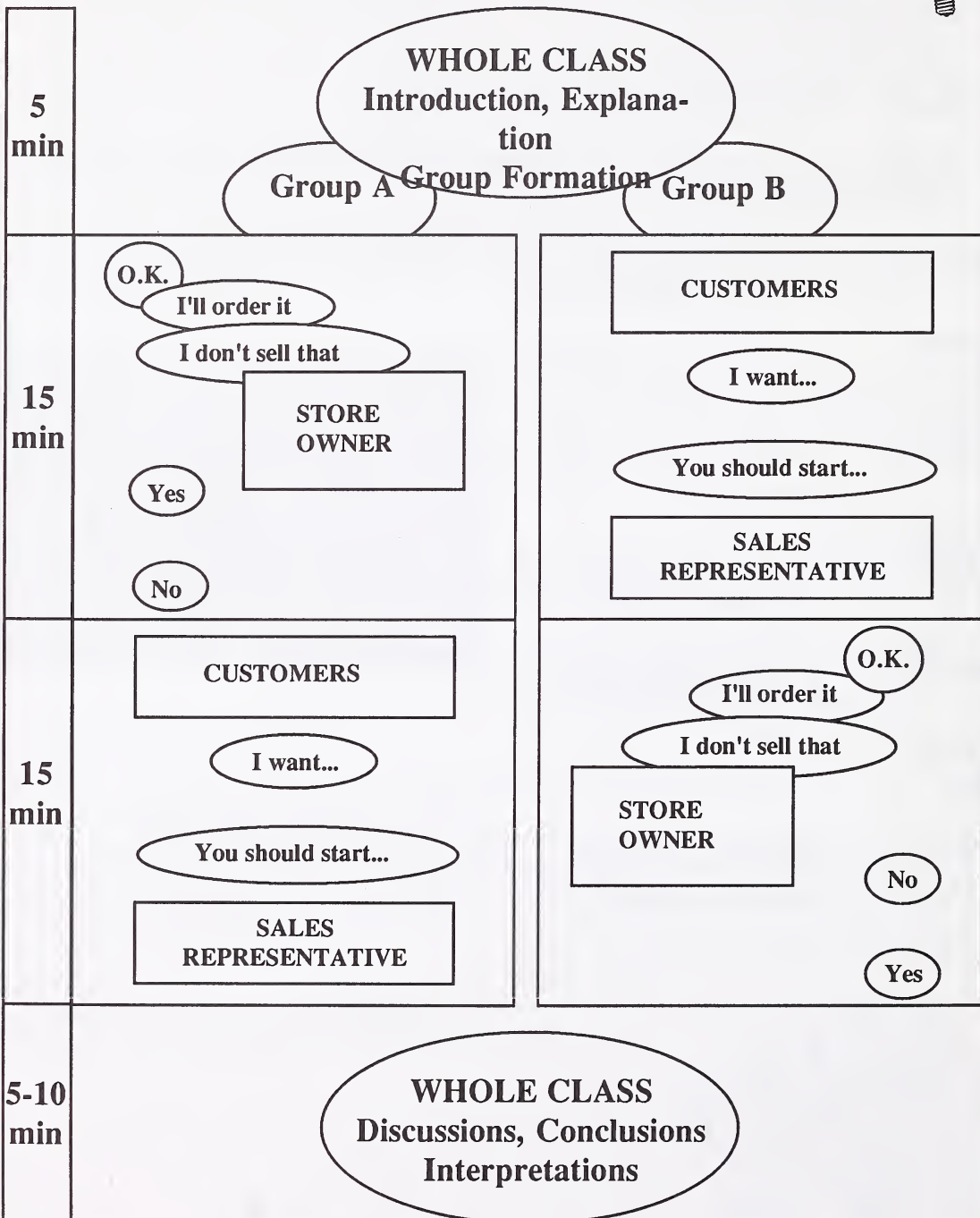
1. Talk to business people about how they identify their customers' needs, how they decide what to carry and what they do with things that nobody buys.
2. Establish a pen-pal or tape-pal or an exchange program with a school in a community much smaller (or larger) than yours.



Glossary

<u>barbed wire:</u>	twisted wires armed with barbs or sharp points
<u>fence staples:</u>	horse-shoe shaped metal loops where both ends are driven into a fence post to hold the wire in place
<u>fencing tools:</u>	various mechanical or hand-worked instruments used to make a fence i.e. hammer, post pounder, saw, etc.
<u>metal tape measure:</u>	an instrument used for measuring distance, made of metal tape
<u>multi-end screwdriver:</u>	a tool used for turning screws, having various ends to match varied types of screws
<u>adjustable wrench:</u>	a hand or power tool for holding, twisting or turning an object that is adaptable to different conditions
<u>fence stain:</u>	a preparation of dye or pigment brushed onto a fence made of wood (penetrates into the pores of the wood)
<u>post hole auger:</u>	a tool used to bore a hole in the soil in order to put a fence post in the hole
<u>level:</u>	a device for establishing a horizontal line or plane by means of a bubble in a liquid that shows adjustment to the horizontal by movement to the center of a slightly bowed glass tube

TEACHER RESOURCE SHEET ONE -- Flow Chart





SHEET ONE

SHOPPING LIST ONE

100 8 foot (2.5 m) round fence posts	baseball
1 roll barbed wire	right handed fielder's glove
5 boxes of 100 fence staples	kid size bat
3 carpenter's hammers	adult bat
3 fencing tools	24 cans pop (6 diet)
1 20 kg box 3 inch (90 mm) nails	4 boxes ripple chips
1 25 foot (8 m) imperial/metric metal tape measure	6 cans dip

SHOPPING LIST TWO

hand mixer	pancake mix
3 mixing bowls (set)	bread (2 loaves)
cake pan	1 dozen oranges
frying pan	1 dozen apples
tables dishes for 4	1 package sandwich meat
knives, forks, spoons for 4	2 boxes frozen pizza
multi-end screwdriver	5 kg bag potatoes
adjustable wrench (small)	2 cans corn
carpenter's hammer	1 package frozen peas
picture hanging kit	

NOTE

Most posts and nails are still described in imperial units of length. Lumber is then sold by the piece; nails are sold by metric weight.



SHEET TWO

SHOPPING LIST THREE

4 - 4 L cans exterior paint (barn red)	large box oatmeal
2 - 4 L cans exterior white	4 - 1 L 2% milk
4 - 100 mm paint brushes	1 - 2 L skim milk
2 - 250 mm paint rollers with extension handles	1 - 2 kg box brown sugar
20 kg box of 2 inch (50 mm) nails	2 loaves whole wheat bread
2 kg 4 inch (100 mm) twisted nails	strawberry jam
	bacon (1 package)
	pancake mix
	pancake syrup

SHOPPING LIST FOUR

spinning rod	jar of salmon eggs
open faced spinning reel	landing net
4 kg test transparent line	sleeping bag
lures (for pike) 10 - 15, assorted	insect repellent
perch hooks	life jacket

NOTE

Most nails are described by imperial units, but sold by weight, which is measured in metric units.



SHEET THREE

SHOPPING LIST FIVE

1 box birthday candles
1 chocolate cake mix
2 packages weiners
2 dozen hot dog buns
2 large cans apple juice
2 cans frozen orange juice

small paper bags
7 small chocolate bars
7 packs of gum (sugarless)
7 key chains
7 other small toys

2 videos (G or PG)
- one action
- one comedy

SHOPPING LIST SIX

16 fence posts
 8 foot (2.4 m) long
15 - 2 X 4's 8 foot (2.4 m) long
240 - 1 X 6 boards
 5 foot (1.5 m) long
5 kg 3 inch (90 mm) nails
10 kg 2 inch (50 mm) twisted nails
3 - 4 L pails fence stain

post hole auger
level
hammer

NOTE

Most dimensional lumber is still named in imperial numbers with no units (e.g. 2 X 4, 1 X 6, etc.) and sold in imperial lengths. Most nails are named in imperial units and sold by metric weight.

SHEET FOUR



Product 1: Video Vending Movie Machine

For a square meter of space and a source of electricity you can have a self-contained, automatic video rental department in your store.

The vending machine carries a selection of 10 up to date movies on VHS format video. Movies are changed every two weeks by our technicians. You do not have to service or maintain these machines!

Customers pay \$2.00 for a 24 hour rental of any movie. Of this, \$0.50 is returned to you. Your returns are calculated at each bi-weekly servicing.

Our machines are coin operated and accept dollar coins and quarters. They include a video return slot that automatically records each returned tape and releases the customer's security deposit. You never need to become involved. You have a self-operating video rental department in one square meter.

Product 2: Home Sound Equipment

I represent Top Volume Sound Ltd. We manufacture and distribute an affordable line of radios, stereos and portable tape recorders that would be of interest to your shoppers.

If you can make available three shelves, each 1 - 3 meters long, we will fill them with a selection of attractive, modern home sound systems.

Top Volume Sound radios, stereos and tape recorders have proven popular with customers like yours, in towns like yours throughout western Canada. With our equipment and a basic knowledge of sound reproduction technology, you can easily produce sales that will improve the profitability of your business.

STUDENT RESOURCE

SHEET FIVE



Product 3: Mighty Micro Pre-selected Suppers

Your customers are all under time pressure. Whether operating a farm, working in town or commuting to the city, all of your people are pressed for time.

To help your customers gain time, All-World Foods have developed Mighty Micro Pre-selected Suppers. These are prepared meals which can be stored in the freezer and then cooked in the microwave oven within minutes. So at calving or lambing, planting or harvest or any of the rush times in a farming community you should be able to supply your grocery customers with tasty and healthy meals that don't steal time from the business at hand.

Mighty Micro Suppers are available in three formats:

- | | |
|---------|---|
| REGULAR | - for a healthy meal on a working day. |
| GOURMET | - for special occasions that come during peak work seasons. |
| DIET | - so that convenient and fast doesn't have to mean fattening and unhealthy. |

So, look at your freezer section, decide which products aren't attracting customers, and make room for a product that your customers need.

Product 4: Skateboards

Skateboards could be an exciting new product for your sporting goods section. Over the past several years interest in and sales of skateboards have been growing in cities throughout North America. Skateboarding is now one of the most common sporting activities of 12-15 year olds, with many skaters continuing throughout high school.

Our company offers a low priced, beginner board that would be perfect for this community. The deck is graphically exciting, the wheel system is sturdy and dependable, and the performance is excellent for beginners.

By adding these to your sporting goods department, you will open an entirely new market for your store. Beyond the boards themselves is a line of accessory products that make skateboarding both safer and more enjoyable. Gloves, pads, shoes, helmets and hats are just an introduction to this field.

STUDENT RESOURCE

SHEET SIX



Product 5: Magazines and Paperback Books

We supply a selection of weekly and monthly magazines for varied audiences to stores just like yours throughout the province. With a few feet of shelf-space you can easily handle 20 - 30 different magazines aimed at the interests and business needs of your customers. Magazines are shipped at the beginning of their dated period, and can be restocked at any time.

We can also stock a small paperback book area by the magazine racks. Best sellers, westerns, mysteries and fantasy novels have all proven popular in towns like yours.

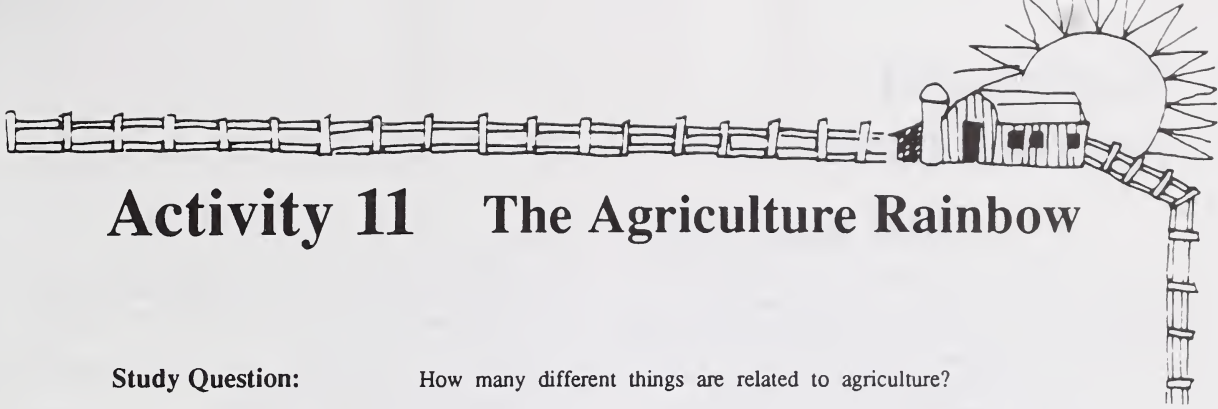
For both magazines and books you can select the topics that will sell here, and our representative will provide titles that are popular or new in each of those categories. We will ensure that magazines reach you as soon as they are available, and that your book stock is rotated regularly.

Product 6: Wonder Wrench

Your hardware department carries an extensive collection of specialty wrenches. I see socket wrenches, pipe wrenches and more. But sometimes people don't need the perfect wrench for a job; they need a wrench that will do a lot of things but not take much space.

Our Wonder Wrench is scientifically designed to fit all nuts or bolt heads from 5 - 25 mm. It will adjust as it is used, and it will not loosen under pressure. Thus it will not slip, which means no scraped knuckles and no rounded off corners.

You can easily sell our Wonder Wrenches at \$9.99 each, and they will be extremely popular, for any mobile work station. Wonder Wrench can be carried in a glove compartment, a tool box or even a pocket. It is the only wrench your customers may ever need for field repairs.



Activity 11 The Agriculture Rainbow

Study Question:

How many different things are related to agriculture?

Activity:

Children develop a collage of agricultural images organized by colour bands to form a rainbow.

Curriculum Fit:**Division Two - Language Arts**

- Demonstrate awareness of the contribution of design in pictures to meaning

Grade Four - Social Studies

- Lifestyles: Modern Times
- How do lifestyles today differ from earlier lifestyles?

Division Two - Science

- Matter and Energy: Light
- White light is a combination of all the colours of the spectrum refraction

Agriculture Concepts:

Production, Processing and Marketing Systems

Importance of Soil and Water

Purpose:

To have students communicate graphically, recognize the colour spectrum and collect images of contemporary agricultural life.

Materials Required:

a bulletin board size expansion of the rainbow poster

Time Required:

Five to ten minutes per day for a week.

Background -- For the Teacher

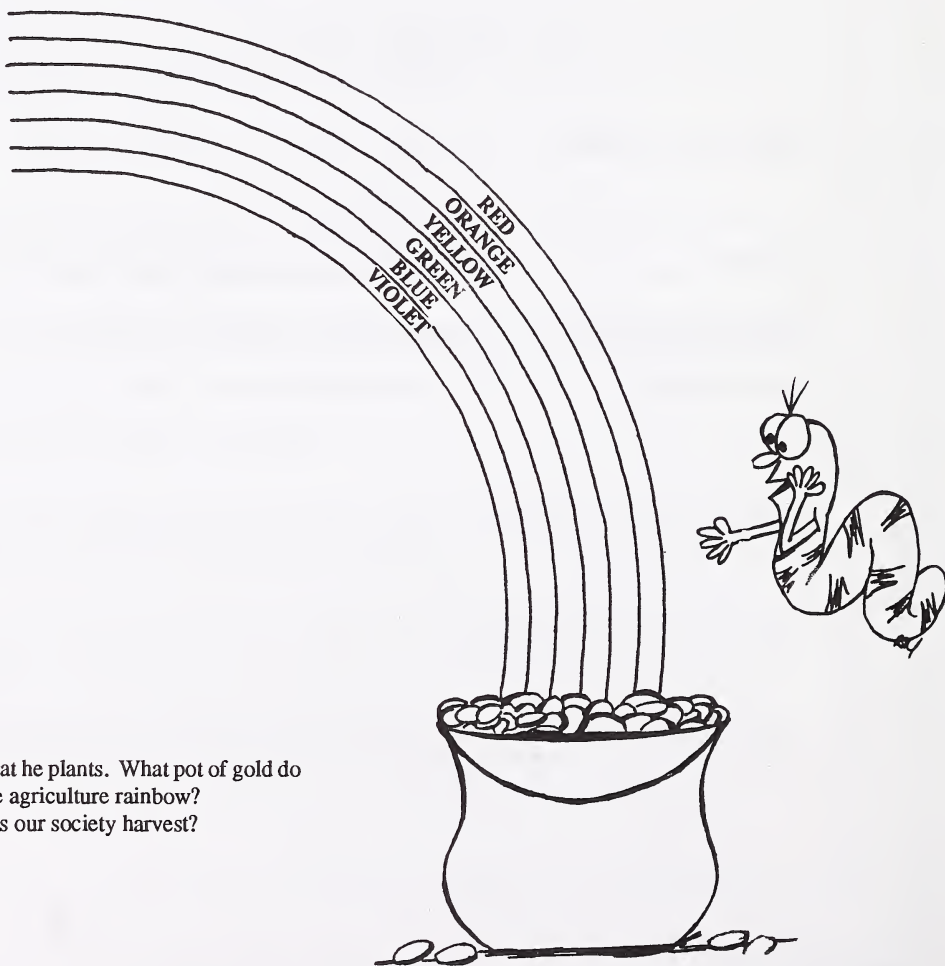
A rainbow is an arc or circle that exhibits in concentric bands the colours of the spectrum. It is formed opposite the sun by the refraction and reflection of the sun's rays in raindrops, spray or mist. (Webster's Seventh New Collegiate Dictionary)

But, the rainbow can also be a symbol of something that is made up of a wide variety of components. That is why it is used in this agriculture lesson. Students will be able to see that — like the rainbow — agriculture covers a varied spectrum.

This lesson can be used on several levels in different subject areas. At its simplest level, it allows students to identify and classify objects. At a higher level, it will help Social Studies students learn about the components of an agricultural lifestyle. The lesson can also teach children in Science about light and colour.

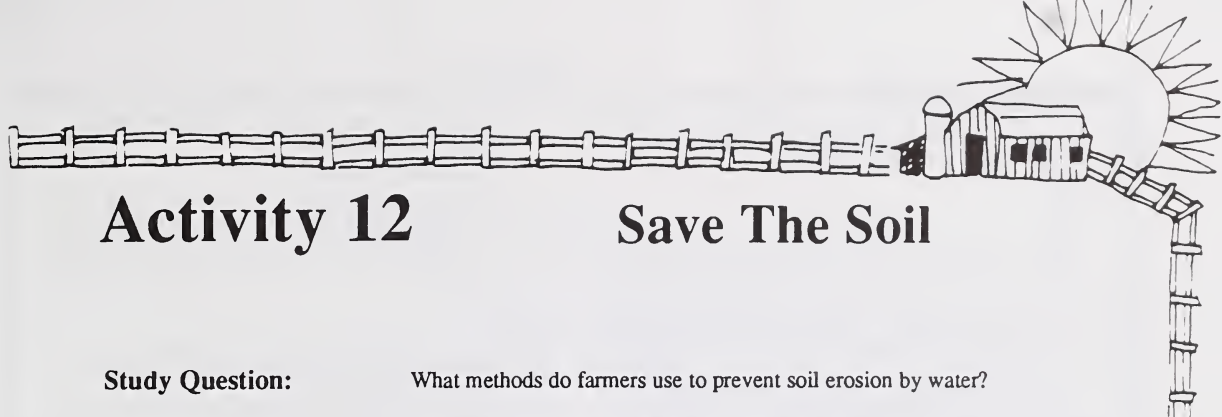
Procedure:

1. Expand this rainbow to bulletin board size.
2. Have students collect pictures of agriculture products, machines, buildings, etc. and glue them onto the proper colour field of the rainbow.
3. If your focus is Social Studies, stress the pictures as elements of present day lifestyle.
4. If your focus is Science, stress the rainbow spectrum identity and the role of reflected light in determining the colour of objects.



Discussion Questions:

1. A farmer harvests what he plants. What pot of gold do you harvest from the agriculture rainbow?
2. What pot of gold does our society harvest?



Activity 12

Save The Soil

- Study Question:** What methods do farmers use to prevent soil erosion by water?
- Activity:** Students watch a video on soil erosion, then perform experiments to illustrate the effects of erosion with and without soil saving practices.
- Curriculum Fit:** **Division Two - Science**
- To observe and describe soil erosion by running water
 - To observe, describe and infer types of farming practices which can prevent loss of soil to water
- Agriculture Concepts:** Importance of Soil and Water
- Purpose:** To illustrate that soil can be eroded by water.
- To demonstrate soil saving farming practices.
- Materials Required:** Film #512 from Alberta Agriculture Multi-Media Library, 22 minutes.
Title: "O Gully - Where Is The Soil?"
- 6 wooden trays 30 cm x 60 cm x 10 cm deep or 6 large rectangular foil roasters
 - plastic lining for the trays
 - 3 - 2 x 4s 60 cm long
 - 2 - 2 L watering cans
 - soil - black loam, enough to nearly fill the trays
 - sod - 30 cm x 60 cm
 - wooden chips, leaves, straw, grass clippings mixture
 - 2 - 1.36 L cans with a very small hole in the lid
 - 6 - 2 L wide mouth glass jars
 - stand about 60 cm high with slats on top
 - 6 - graduated cylinders
- Time Required:** Two or three periods.

Background -- For the Teacher

Before man began cultivating soil, nature provided trees and grass to protect the soil from the harmful effects of water erosion. One of the earliest causes of soil erosion in Alberta was buffalo traffic. The soil became compacted in well-worn trails and led the way to soil loss by water erosion. In addition, with the cultivation and production of crops, the soil became bare and unprotected. This left the soil open to damage by heavy rainfall and thus erosion. Water would run down slopes and create deep gullies, washing away great quantities of productive topsoil.

Soil degradation, which is a term for erosion and other problems which hinder soil productivity, is very serious in Alberta. Soil degradation costs Albertans approximately \$429 million a year or almost \$3 million a day in lost revenues. In the Peace River area, spring snow melt running over unprotected ground can create very serious erosion problems. However, it is not too late. There are many things that we Albertans can do to save our soil from water erosion.

Procedure:

Preparation

1. Order film from the Alberta Agriculture's Multi-Media Library.
2. Build or borrow six wooden or cardboard trays. Line with plastic or tar paper. If unavailable, use 6 large tin foil roasters which can be used for other class projects. In the middle of one end of each box cut a V-notch 5 cm to 7 cm deep and fit with a spout to draw runoff water into a container.
3. Assemble remaining materials.
4. Copy Student Resource Sheets for each student.

Introduction

5. Use the film, "O Gully, Where's the Soil?" to initiate discussion on water erosion and techniques to conserve Alberta's soil.

Questions to discuss:

- a. What is soil erosion?
- b. How does water cause soil erosion?
- c. What are several ways that farmers try to stop erosion?

Activity

6. Divide the class into four groups. Assign one experiment to each group.
7. Have all groups prepare their experiments. When ready, have each group demonstrate while the class writes down the observations.

Conclusion

8. Take up conclusions of each experiment, emphasizing that ground cover (grass or pasture), mulch, and contouring are methods that farmers use to prevent soil erosion by water.

Discussion Questions:

1. What is top soil? What is its importance to agriculture?
2. Why are we saving the soil?
3. Why is soil conservation so important around the world, e.g. Brazilian rain forest, Africa, Alberta?

Evaluation:

1. Marks assigned for demonstration of experiments and completed Student Resource Sheets.
2. Students hand in a one page summary of the importance of the four experiments, what they learned, and the reasons why saving the soil is so important.



TEACHER RESOURCE



SHEET ONE

Alberta farmers are advised to use several methods to reduce soil erosion by water. The following four experiments illustrate the importance of ground cover, plant trash or mulch, and contouring to reduce soil erosion.

When land is under cultivation, enough plant trash (straw and residue) should be left visible in the field to help anchor the soil so that rainfall cannot wash it away. The plant trash actually helps the soil absorb water and protects soil against the harmful pounding of raindrops. Plant trash or mulch prevents the puddling of the top soil under the impact of the rain. When water hits bare soil, the surface pores of the soil become clogged and do not allow the soil to take in the water. In large fields, water would run off as depicted in the illustration. When the pores of the soil are protected by

plant trash and mulch, water can enter and be absorbed by the soil.

Pasture or hay should be planted on steep slopes where gullying has occurred to protect the soil against the movement of running water. The grass roots open up channels to allow the soil to absorb the water. The grass stems slow down the running water so that it does not disturb the soil surface.

Contour strip farming can be very effective, especially on slopes. Planting crops across the slopes prevents soil loss by slowing down the water runoff and thereby allowing the soil and plants to take in water.

By doing the experiments in the lesson, students can deduce ways in which soil erosion by water can be reduced.



STUDENT RESOURCE

SHEET ONE -- Experiment A



Purpose:

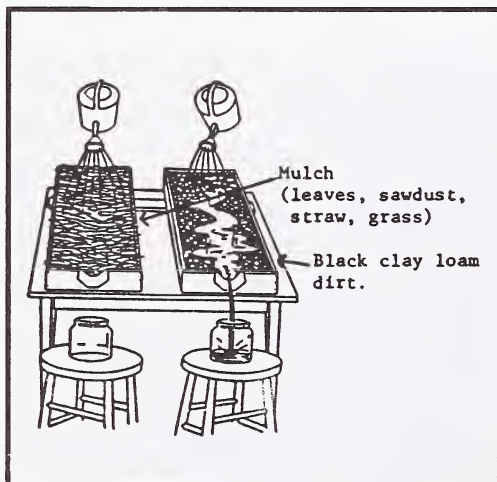
To see the effect of mulch in preventing soil loss.

Hypothesis:

Materials:

- 2 boxes lined with plastic
OR 2 foil trays
- black loam soil
- 2 wide mouth jars
- mulch
- 2 watering cans filled with water
- 2 graduated cylinders
- 1 - 2 x 4 about 60 cm long

Diagram:



Procedure:

1. Line two boxes with plastic.
2. Fill the boxes with black loam soil to a height even with the spout.
3. Cover one box of soil with an even layer of mulch - leaves, grass clippings, straw, wood chips.
4. Set boxes on a table so that the spouts extend over the edge. Place a board under the opposite edge of both boxes so that the boxes are sloped. Place a wide mouth jar on a stool under each spout.
5. Fill two watering cans with water. Two students sprinkle water on the two boxes from a height of about 30 cm, pouring steadily and at the same rate.

Observations:

1. Describe the water in the jars.
2. How fast does the water flow into the jars?
3. Using graduated cylinders, measure the amount of water that entered the jars.

Box A - Soil Only

Box B - Mulch Cover

Conclusions:

1. What conclusions can be drawn from this experiment?
2. How can a mulch of straw, grass clippings, or shavings prevent soil loss?
3. Why prevent soil loss?
4. How does soil loss effect you?

STUDENT RESOURCE

SHEET TWO -- Experiment B



Purpose:

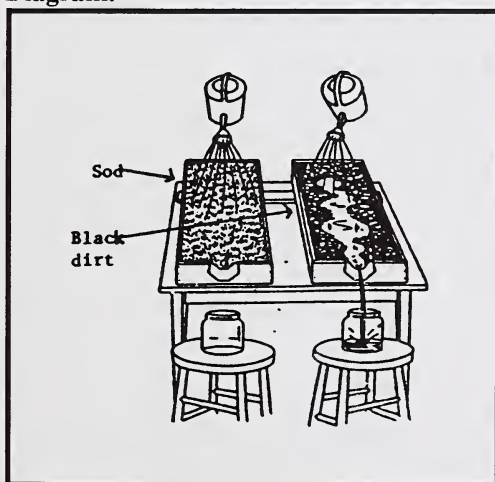
To see the effect of grass cover in preventing soil loss.

Hypothesis:

Materials:

- 2 boxes lined with plastic
OR 2 foil trays
- black loam soil
- 2 wide mouth jars
- sod to fit one box
- 2 - 2 L wide mouth jars
- 2 watering cans filled with water
- 2 graduated cylinders
- 1 - 2 x 4 about 60 cm long

Diagram:



Procedure:

1. Fill both boxes with black loam soil.
2. Cut a piece of sod to cover loam in one box. Using scissors, trim grass so that it is about 3 cm high.
3. Place boxes on a table so that spouts extend over the edge.
4. Place board under other end of boxes so that boxes are sloped. Place jars under spouts on stools to catch water.
5. Fill watering cans with water. Two students will pour water on the two boxes at the same time and at the same rate from a height of about 30 cm.

Observations:

1. Describe the water in each jar.
2. Describe the flow of water into each jar.
3. How much water reached each jar? Measure using graduated cylinders.

Box A - Soil Only

Box B - Sod Cover

Conclusions:

1. What conclusions can be drawn from this experiment?
2. How does sod or ground cover prevent soil loss?

STUDENT RESOURCE



SHEET THREE -- Experiment C

Purpose:

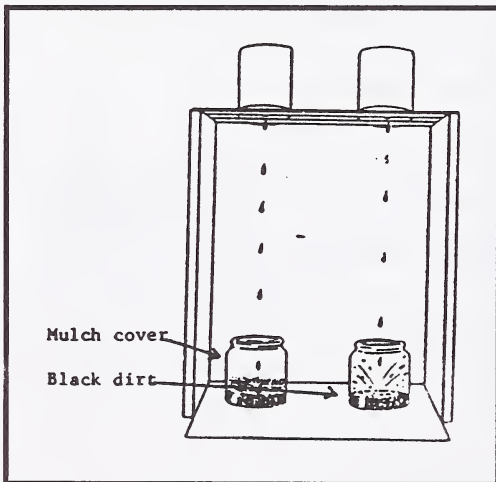
To see the effect of raindrops on bare soil and on soil covered with mulch.

Hypothesis:

Materials:

- 2 wide mouth jars
- black loam soil
- mulch
- 2 cans with lid removed and small hole punched in middle of the bottom
- water
- wooden stand about 60 cm high

Diagram:



Procedure:

1. Put black soil 10 cm high in both wide mouth jars.
2. In one jar, place about 5 cm of mulch (grass, leaves, wood shavings) on top of soil.
3. Set jars at bottom of stand, one at each side.
4. Set cans directly above each jar. Fill with 1 litre water each.

Observations:

1. Describe what happened when the water droplets fell into each jar.

Jar A - Soil Only

Jar B - Mulch Cover

Conclusions:

1. What conclusions can be drawn from this experiment?
2. What effect does mulch have on the action of drops falling on soil?
3. What happens to soil when water drops fall on bare soil?

STUDENT RESOURCE

SHEET FOUR -- Experiment D



Purpose:

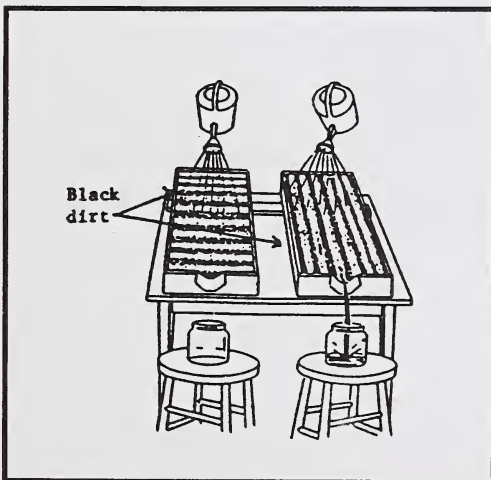
To see the effect of contouring on soil erosion.

Hypothesis:

Materials:

- strips of sod about 1.5 cm wide
- 2 boxes lined with plastic
OR 2 foil trays
- black loam soil
- 2 wide mouth jars
- 2 watering cans filled with water
- 2 graduated cylinders
- 1 - 2 X 4 board about 60 cm long

Diagram:



Procedure:

1. Fill both boxes with black loam soil.
2. In box A, place strips of sod in rows crosswise in soil about 5 cm apart. Make sure strips reach to each end.
3. In box B, place strips of sod in rows lengthwise in soil about 5 cm apart. Make sure strips reach to each end.
4. Place boxes on the table with spouts extending over the edge.
5. Place board under other end of boxes, so that boxes are sloped.
6. Set jars on stools under spouts.
7. Fill two watering cans with water. Two students sprinkle water on the two boxes from a height of about 30 cm, pouring steadily and at the same rate.

Observations:

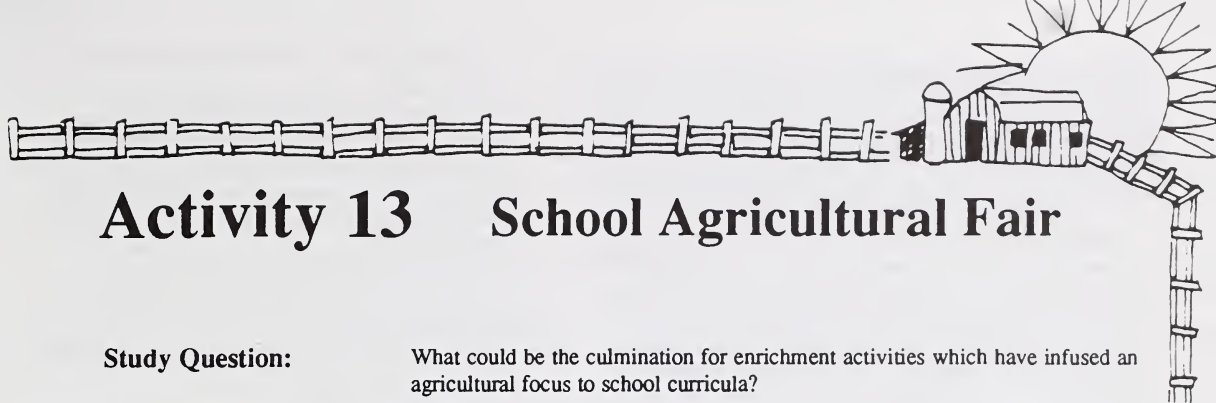
1. What effect did the direction of the rows of sod have on the flow of water in the boxes?
2. Measure the amount of water in each jar using graduated cylinders.

Box A - Crosswise strips of sod

Box B - Lengthwise strips of sod

Conclusions:

1. What conclusions can be drawn from this experiment?
2. What effect does contouring have on water erosion?
3. Why is this an important method for farmers?



Activity 13 School Agricultural Fair

- Study Question:** What could be the culmination for enrichment activities which have infused an agricultural focus to school curricula?
- Activity:** School Agricultural Fair
- Curriculum Fit:** **Division Two - All Subjects**
- Concepts can easily be infused into Language Arts, Science, Social Studies, Mathematics, Music, Art, Drama, Physical Education at all levels from Division I through Division IV.
 - An Agricultural Fair would be the culmination of the year's study in which the students will have gained an awareness of the importance of agriculture to their daily lives.
- Agriculture Concepts:** Economic Importance
Capital and Technologically Intensive Nature of the Industry
Importance of Soil and Water
Production, Processing and Marketing Systems
Diversity
- Purpose:** To help students develop knowledge, skills and a positive attitude. This will empower them to be self-confident, capable individuals with strong goal-setting and decision-making skills that will help improve not only their lives but that of the community. This type of project shows students that their efforts are necessary and important to the success of the event. An agricultural fair gives the school, the agricultural community, and the community at large an invaluable opportunity to interact, to learn from one another, and to grow.
- Materials Required:** as decided by staff and students
- Time Required:** Planning for an agricultural fair that is to be held in May or June should begin in early fall. The actual fair will probably take about 1 1/2 days.

Background -- For the Teacher

Teachers such as Donna MacKay at H. T. Coutts School in Claresholm have had considerable success holding school agricultural fairs. It is a good experience for the students because they are making a positive contribution to a school activity. The fair also offers an excellent public relations tool in which the community can see what the students are capable of.

It is strongly recommended that teachers have the appropriate grade specific resources available to them:

Agriculture And Me - for Division One

Pride in Alberta - for Division Two

Agriculture: Land and Life - for Division Three

The Business of Agriculture - for Division Four

These books give excellent lessons, students project ideas and enrichment activities which will be helpful in choosing projects for the fair. Each series is aimed at specific grades and infuses agricultural concepts into existing core curricula.

Students' projects should not be specially prepared for the fair, rather, a component and result of the existing curriculum.

Procedure:

Preparation

Six Months in Advance

1. Discuss agriculture fair idea with each staff member individually to elicit support. At this time discuss ideas for:
 - a. project areas to be judged
 - b. projects that will not be judged
 - c. categories and rules
2. Set a tentative date.
3. Have a staff meeting to discuss theme, objectives of fair, outline. From the list compiled from suggestions of individual teachers, as a group decide:
 - a. project areas to be judged
 - b. project areas not to be judged
 - c. categories and rules
 - d. special events
4. All projects for the fair should be completed ahead of time and stored. For example:
 - Artwork
 - Band/choir music (regular practices so nothing left to the last minute)
 - Arts and crafts projects
 - Computer graphics (banners, certificates)
 - Social studies reports (both written and posters)
 - Industrial arts projects
 - Sewing projects
 - Poetry and stories

5. Compile list of judges and volunteers. Notify of tentative date.
6. Order films and pamphlets. Notify Rural Development Specialists and other available resource people (e.g. Beef Information Centre, Nutritionist at Safeway, Alberta Egg and Fowl Marketing Board, Alberta Milk Producers, Dairy Nutrition Council, 4-H Clubs).
7. Contact possible donors by letter or phone.

Two Months in Advance

8. Science and social studies display projects should be started:
 - a. research information
 - b. construct models, do experiments
 - c. organize data, write reports
9. Gather donations and displays.

One Month in Advance

10. Notify judges and volunteers.
11. Inspect entries for name and class number.
12. Arrange times for teachers and students to put up displays. (If gym is used, it will be unavailable for 2 days)
13. Book tables from other schools or local clubs.
14. Order ribbons, prizes.
15. Arrange viewing schedule - publicity
 - e.g. students 2:30 - 3:30
 - public 3:30 - 7:00 (8:00)
 - other schools 9:30 - 10:30 next day
16. Arrange for senior students to clean gym and load up tables the morning of the second day.

Note:

- A. Do all judging possible before final day.
- B. Judge displays in the morning. Allow 3-4 hours minimum.
- C. Prizes - to be determined by school. If a fund raising event, ask for donations from agribusiness community.

Organization

17. Fair Coordinator

Plans outline, timeline
Suggests theme, topics in each area
Delegates jobs - follow-up on progress
Plan display areas, number of tables
Arrange resource people and materials
Contact volunteers, judges, obtain donations
Send out thank you notes
(e.g. computer class made certificates)

18. Area Coordinators

Art teacher volunteers to gather art and be resource person
Band teacher arranges short program for evening
Drama teacher and students organize a play to be presented in another room every 1/2 hour.
Volunteer teacher in charge of getting tables and volunteers.
Language arts teacher gathers creative writing submissions, arranges them, and presents to judges
Each science and social studies teacher responsible for setting up class displays

Additional Fair Flairs

19. Invite a few agricultural businesses and business groups.
For example:
4-H, C.A.P., Agaware
Alberta Wheat Pool
Local businesses - outside agricultural machinery display
Local milk producers, pork producers association
Many of these groups will give away buttons, stickers, samples that add interest and a fair - like atmosphere
Stipulate no sales, information only - some companies have really interesting displays (mini elevators, use of fertilizers, types of feed)
20. Invite seniors and other schools before fair is open to public or next morning.
21. Plan pre-fair activities.
 - a. rodeo days (gym activities)
 - b. lip-sync old humorous country songs
 - c. teach "old time" dancing
 - d. produce a food product commercial
eg. M-Moo Cow
 - e. Guest speakers (in the ag-business) or pioneers

Note:

It is not necessary to have prizes or judging but it is a motivator if they are going to spend home time to make displays.

Projects:

22. Listed are projects for each subject area.
Art - theme related ie. harvest, salute to pioneers
Writing - select topics for various grades (theme)
Social - select from curriculum ie.
Gr. 4 - roles of natural resources in agriculture
Gr. 5 - roles of agriculture in Canada
Gr. 6 - other cultures agriculture methods
- comparison/contrast
Gr. 7/8 - global roles - trade, government
Science
Gr. 4/5/6 - mechanical (irrigation, dairy farming, tractor types)
- plants
Gr. 7/8 - erosion, shelterbelts
- animal diseases
- fertilizers
- chemical sprays
- soil types
- climate
- in essence - study of plants, animals, and their environment with an agricultural perspective
Drama - skits depicting pioneer life; rural life vs. urban life; environmental awareness of farming community
Band - medley of "farm" songs etc.
Physical Education - square dancing, line dance, waltz, Texas two-step etc. demonstrations
For Division One classes - perhaps a Pioneer Fun Fair

Volunteers

1. A teacher on maternity leave or retired may be able to organize, read through and pre-judge stories and art.
2. Regional Alberta Agriculture people are willing to judge and supply information.
3. Retired teachers and substitute teachers may be willing to help.
4. Many parents are extremely helpful.
Willing to organize a petting zoo
Demonstrate crafts, bread baking, spinning
Gathering ribbons and judging instructions together
5. Business people with interests in specialized areas
Agronomists
Local Artists
Newspaper Personnel

Conclusion:

23. Staff evaluation sheet should include:
 - a. What I liked best about the fair.
 - b. What I disliked about the fair.
 - c. Things we should change.
 - d. Ideas we should keep next year.
 - e. How I would improve the fair.

Motivators

Motivation for the Staff:

An agricultural fair is an excellent public relations occasion which can enhance the school-community relationship. In addition, the fair may be used as a fund raising event (i.e. for a computer system for the school library).

To be successful, there should be total staff commitment during the planning stages. After the fair, staff should be recognized for their efforts in the community newspaper or school newsletter. Pictures of the fair would be a welcome addition to the school yearbook.

Local winners could enter their project into the Ag Ambassador Fair held for all Alberta students from grades one to twelve. Medicine Hat hosted the fair from 1990 to 1993. The 1994 Fair was held in Camrose. The 1995 Fair is being held in Stettler and Grande Prairie is being considered for 1996. The Ag Ambassador Fair is co-sponsored by Alberta Wheat Pool and Alberta Agriculture, Food and Rural Development. More information, including dates and locations for the yearly Ag Ambassador Fair may be obtained by contacting:

**Alberta Agriculture
Agriculture in the Classroom Program
PH. 427-2171
Fax: 438-3362**

Motivation For Students:

1. **Rewards**
Ribbons for 1st, 2nd, and 3rd prizes.
Prize donations from local businesses and agribusinesses for special competitions.
Class point system for participation.
2. **Recognition from peers and parents**
i.e. Pictures of projects and participants on school bulletin boards.
3. **A sense that what they are doing is beneficial**
 - a. Farming is the 10th most stressful occupation out of a list of 130. Farmers have a lot of problems and many are leaving their farms. Their problems are solvable only if we work together.
 - b. Predict what will happen to agriculture in the future if the land is destroyed.
 - c. Research the Guinness Book of World Records to find interesting facts about food and animals.

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